CDC GLOBAL AIDS ACTIVITY

TECHNICAL STRATEGIES

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Table of Contents

LIFE: A Global AIDS Initiative

AIDS has taken a terrible toll on individuals, families, and communities worldwide. This disease does not respect borders. It affects all the world's people, and it is of concern for all humanity.

Recognizing the impact of the HIV/AIDS pandemic, the U.S. has joined the International Partnership Against HIV/AIDS in Africa (IPAA) to try to mitigate its impact and stop its spread. A key component of U.S. participation in the IPAA is *Leadership and Investment in Fighting an Epidemic* (LIFE), a program that expands the U.S. government's response to the growing HIV/AIDS pandemic in Africa and India. For fiscal year 2000, the LIFE Initiative provides a $100 million increase in U.S. support for HIV/AIDS prevention, care, and treatment in 13 countries and three regional programs in India and Sub-Saharan Africa including these countries:

> Botswana, Cote d'Ivoire, Ethiopia, India, Kenya, Malawi, Mozambique, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Uganda, Zambia, and Zimbabwe

U.S. Agencies Working to Serve the Needs of LIFE Countries

The LIFE Initiative falls under two U.S. government agencies: the U.S Agency for International Development (USAID) and the U.S. Department of Health and Human Services (through the Centers for Disease Control and Prevention—CDC, and the Health Resources and Services Administration--HRSA.)

USAID takes the lead in facilitating and coordinating LIFE activities. USAID, providing development and humanitarian assistance worldwide, has since 1986 through its missions and regional programs, dedicated over $1.4 billion to the prevention and mitigation of the AIDS epidemic in 46 countries. USAID provides technical and financial resources to government and NGO partners for locally appropriate services for prevention and treatment of HIV and sexually transmitted infections (STI).

CDC, the U.S. agency charged with preventing disease, injury, and disability, has been at the forefront of the U.S. effort to determine how HIV is transmitted and to educate the American public on how to prevent HIV. This agency has a long history and an extensive network of international collaborators in disease prevention and control, as well as experience partnering with USAID on health initiatives. In addition, HRSA has broad experience providing health and social services in the U.S. for vulnerable children and for individuals and families affected by HIV/AIDS.

Goals for the LIFE Initiative

The current goals for LIFE cover three years, 2000-2002. In accordance with UN AIDS goals for the international community, and as a result of wide-ranging consultation with the 15 target countries, the LIFE initiative will focus on four main objectives:

- Primary prevention of HIV transmission
- Improve community and home-based HIV/AIDS care and treatment.
- Strengthen communities' capacity to care for children affected by HIV/AIDS
- Develop capacity and infrastructure, including disease surveillance, and HIV/AIDS program monitoring, evaluation and management

The LIFE initiative and other supplemental United States Government (USG) resources are enabling USG agencies to build on lessons learned in primary prevention, and to develop new collaborative activities in both social and clinical aspects of HIV/AIDS care and support.

Initial Approach and Longer-Term Plans

A guiding principle of the LIFE initiative is the commitment of the host country and its ownership of LIFE activities. USAID and CDC will conduct only those prevention, care, and/or treatment activities that assist countries in their own national strategic plans for HIV/AIDS prevention, care and support. Specific activities and objectives are being delineated at the country level through consultation with country governments, NGOs and other donors, coordinated by the USAID Mission. All activities will be carried out by local experts and stakeholders, including people living openly with HIV/AIDS (PLHA). All activities are designed to strengthen existing efforts and institutions. USAID and CDC also expect this collaboration to provide a wealth of best practices and ideas that can then be exchanged and used as appropriate both in LIFE countries and in the U.S.

CDC Global AIDS Activity

1. Technical Strategies

1.1 Introduction

The CDC Global AIDS Activity (GAA) has been created to implement the following three LIFE program elements:

- Primary Prevention --Programs focusing on prevention of sexual transmission through voluntary counseling and testing (VCT), sexually transmitted infection (STI) management, behavioral interventions with youth and other vulnerable groups, national mobilization campaigns and public-private partnerships. It will also focus on reduction of mother to child transmission (MTCT) and reduction of HIV transmission through the blood supply.

- Capacity and Infrastructure Development--Programs focusing on HIV/STI/TB surveillance, laboratory support, monitoring and evaluation, training and information management.

- Care, Support and Treatment--Programs focusing on tuberculosis (TB) prevention and care, plus prevention and care of other opportunistic infection, palliative care for AIDS cases and the use of antiretroviral treatments.

1.2 Purpose

This manual, outlining 16 overlapping technical strategies, has been developed to aid you in planning and implementing new activities in your country and enhancing existing ones to stem the global HIV/AIDS pandemic. For each of the 16 strategies below, CDC history and experience is included, as well as a menu of suggested activities, considerations for implementation, resource and key partner suggestions, and parameters for monitoring and evaluation.

Each strategy was developed by a team of experienced CDC staff and reviewed by a panel of experts internal and external to CDC. Each team carefully researched current resources to identify best practices and then proposed an approach and a sample set of activities to be considered for country-level planning in partnership with local entities. Several strategies cut across disciplines, such as monitoring and evaluation, which is its own strategy as well as a component of each strategy.

Appendix A lists the participants in each strategic working group and Appendix B, suggested readings for each strategy.

The strategies outlined below will evolve over time, and we invite you to use them as suggestions, as inspiration for your own local efforts, and to open a dialogue. We encourage you to describe your own successes in developing and implementing your country activities in collaboration with your local partners, and inform the CDC LIFE team at the address below.

1.3 Country-Level Planning

For any program to be successful, the Ministries of Health, National AIDS Control Programmes, and other in-country partners must own the program. To this end, CDC will meet with partner governments, USAID missions and others to collaborate in designing a program of assistance based on country needs, the role of other partners and the CDC technical strategies described in this document. CDC's efforts focus on those specific program areas that contribute to CDC's overall GAA objectives, namely:

- Reduce HIV transmission through primary prevention of sexual, mother-to child, and blood transmission.
- Strengthen the capacity of countries to collect and use surveillance data and to manage national HIV/AIDS programs.
- Improve community and home-based care and treatment of HIV/STI and opportunistic infections.

Many of the strategies described in section two of this document, such as Laboratory Support, Information Management, Training, and Monitoring and Evaluation, also address the primary prevention strategies.

1.4 Principles

The following are guiding principles in using these technical strategies to develop plans for country programs.

- Use the best currently available practices and tailor any program specifically to the situation in each country. Allow for strategies to change and evolve as our knowledge grows of the epidemic and successful interventions.
- Develop activities with multiple disciplines in mind. Activities that focus on mothers and children may also be youth-focused; all activities will have monitoring and evaluation as a component.
- Keep sustainability in mind, but do not eliminate unsustainable critical activities on this basis alone. CDC is prepared to respond to the urgent needs of the country despite the sustainability of a given program.

2. Primary Prevention Technical Strategies

2.1 Voluntary Counseling and Testing

Background

In high prevalence settings, many individuals tend to develop feelings of hopelessness and a sense that it is too late for behavior change. The power of positive behavior-change messages may be reinforced by effective HIV VCT services. Knowledge is power.

Voluntary Counseling and Testing (VCT) is the cornerstone for early access to prevention as well as to care and support services. High public awareness of HIV, increasing numbers of persons sick and dying with AIDS, and knowledge of personal risk behaviors result in an increased desire to learn one's serostatus.

The need to promote VCT for people with asymptomatic disease has become compelling in the wake of the development of less costly interventions to reduce mother-to-child transmission (MTCT) of HIV and to reduce HIV-associated infections (e.g., tuberculosis preventive therapy and cotrimoxazole prophylaxis). In addition, other medical and supportive services can help those living with HIV to live longer, healthier lives and prevent transmission to others.

Special situations where VCT plays an essential role:

1. Where feelings of hopelessness are present.
2. For couples making informed decisions (relationships, planning marriage, pregnancy planning, etc.).
3. In clinical settings where anti-retroviral therapy and/or preventive prophylaxis are available (e.g., antenatal clinics, STI and TB clinics, general medical clinics).
4. Occupational exposure.

Recognized Best Practices

UNAIDS and WHO have taken the lead in describing best practice guidelines and developing case studies for VCT service delivery programs. Lessons learned: 1) VCT should be part of a comprehensive HIV prevention program; 2) Protecting confidentiality is critical to ensure both trust and demand for VCT services; 3) Integrated services for STI management, family planning, and referral for TB diagnosis and treatment are feasible and well received by clients; 4) Effective counseling requires a client-centered approach including risk reduction planning and skill-building as well as a) a well trained and supported staff, b) a well-defined and active referral system for both HIV-positive and HIV high-risk negative individuals for on-going support to other care partners in the community, and to post-test clubs, and c) routine monitoring, quality assurance, and evaluation activities.

Please refer to Appendix B for a listing of documents that reflect current recognized best practices for voluntary counseling and testing.

CDC Experience and Capabilities

CDC has provided both long-term assignees and short-term consultants to Ministries of Health and NGOs to help implement and expand VCT services.

CDC Approach

VCT must be a component of a more comprehensive HIV/AIDS prevention and care program. Political and community commitment, community needs, and attitudes must be starting points. Then linking to other prevention and care services must form a major component of the strategy.

Improve access to, availability of, and use of HIV voluntary counseling and testing:

- Collaborate and assist the Ministry of Health, other in-country partners (e.g., other government ministries, NGOs, international agencies) in implementing, monitoring and evaluating HIV counseling and testing programs.
- Identify barriers and concerns raised in providing VCT and work with existing or new campaigns to help reduce the fear, stigma, discrimination, and isolation associated with HIV infection and AIDS.

Models for the CDC Approach

Undertake joint MOH-CDC-USAID assessment activities to identify plans, determine resource allocation, identify training needs and pinpoint other issues to be addressed in expanding and/or implementing these programs.

1. CDC, through USAID funding and collaboration, works directly with NGOs, Ministries of Health, and other prevention partners to help implement or expand VCT activities. This model could include both long-term CDC staff and short-term consultants provided through interagency or bi-lateral agreements between CDC and USAID. Examples: Uganda and Malawi.
2. CDC--with USAID, and/or CDC LIFE funds, or other donor funding-- works with donor contractors (e.g., IMPACT, Measure, PSI) to help implement VCT activities. This model would include CDC staff as short-term consultants. Examples: Zimbabwe, Mozambique.
3. CDC, through CDC LIFE funds, works directly with the Ministry of Health/AIDS Control Programme and NGOs, to implement and/or expand access and availability of VCT. This model could include both long-term CDC staff and short-term consultants facilitated by U.S. Embassies through Memoranda of Agreement with individual countries. Examples: Botswana, Côte d'Ivoire.
4. Combinations of the three models above may apply in some countries, such as South Africa.

Illustrative Activities

First, we must assess services currently available and the existing roles of the MOH, NGOs, CDC, donors including USAID, and other prevention partners. Then, the following activities would be the logical next steps:

1. Establish MOH current priorities, policies, and strategic plans regarding VCT and reach consensus on respective roles of participating agencies.
2. Establish a standard procedure for HIV testing (utilizing rapid test kits evaluated in-country and compared with current standard algorithm).
3. Establish a standard counseling approach for individuals and couples adapted for implementation with rapid tests; establish additional counseling models adapted for groups and for use in clinical settings (antenatal clinics, primary care, etc.).
4. Train counselors/nurses in providing HIV counseling and testing services.

5. Establish a program for social marketing of HIV voluntary counseling and testing– including improving the understanding and valuing of the service, and advertising the service. The broader social marketing effort will probably not be developed or implemented by CDC.
6. Establish pilot HIV-VCT sites and expand as appropriate.
7. Assure the on-going quality of VCT through periodic reviews, observation, and training.
8. Ensure that post-test clubs and linkages are established to other medical and support programs/activities including community and home-based care.
9. Establish monitoring and evaluation components to document process and outcomes as well as to assure operational soundness and share experiences.

Each program should consider integrating additional services such as family planning, sexually transmitted infections (STI) screening and management, and tuberculosis case finding and prevention.

Technical Considerations
The VCT strategy must a component of a comprehensive prevention and care package that contributes to and is an integral part of the government's strategic plan for HIV/AIDS prevention.

VCT specific protocols, guidelines, and operational procedures would need to address the testing procedures, counseling protocols, monitoring and evaluation components (data management system), and a quality assurance process.

Operational Considerations
Each country may have a different mix of needs, depending on existing trained in-country staff and current program implementation status. One in-country assignee may be needed to coordinate several CDC-led initiatives with short-term technical support from other disciplines needed to support the VCT program. Appropriate contractors and/or in-country counterparts may also be used to assist with implementation and training. The assessment must include an inventory of the skills, training, and other personnel needed and address the following interdisciplinary issues:

- Policies and programs targeting reducing discrimination and fear.
- Laboratory infrastructure.
- Surveillance protocols and laboratory monitoring and support.
- Mother-to-Child Transmission prevention programs (please see Strategy 2.2 for details).
- TB prevention and treatment (please see Strategy 4.1 for details).
- STI screening and prevention.
- Home and community-based care.
- Partnerships and collaborations with international donors.
- Condom availability and social marketing.

Resources
In each country where CDC is engaged, the following staff skills are needed for development, implementation, monitoring and evaluation activities.

Public health advisor/educator/epidemiologist

Trainer - Educator
Laboratory consultant
Behavioral scientist/public health educator
Data management support consultant (computers and data entry staff)

Key Partners

Ministries of Health
NGOs
PVOs
UNAIDS
WHO
USAID
Other donors

Monitoring and Evaluation

CDC will assist in developing and implementing information management systems to help describe and monitor process indicators for service delivery. The following are suggested service delivery indicators to be addressed:

Site/Clinic Level Indicators

Type of service site
Client demographics
Risk behavior/exposure variables
Source of information about VCT services
Number previously tested and result
Number offered test
Number accepting test
Number tests by serostatus
Number receiving test result by serostatus
Number receiving other services provided on-site (STI, FP, TB, etc.)
Number referred to other network providers

National and District Level

Districts with VCT services
Level of funding for VCT (compared to overall public health budget)
Sources of funding (government, donors, fee paying, etc.)
Number tests by serostatus
Number receiving test result by serostatus
Quality of VCT services - by periodic assessment
Quality and quantity of media-based and other public information

2.2 Preventing Mother-to-Child Transmission

Background
In sub-Saharan Africa, where up to 40 percent of pregnant women are now HIV-infected, the HIV/AIDS pandemic has eroded hard-won gains in infant and child survival and threatens to have catastrophic effects on the family and on normal population dynamics. In contrast, the U.S. and other developed countries are on the verge of eliminating HIV MTCT.

Without intervention, there is a 15 to 30 percent risk of MTCT during pregnancy and delivery (most transmission occurs close to the time of delivery), and an additional 10 to 20 percent risk postpartum via breastfeeding. The single most important risk factor for transmission is maternal viral load in plasma, cervico-vaginal secretions, and breast milk.

The technology now exists to substantially reduce MTCT in developing countries. Recent international clinical trial results have demonstrated that the risk of MTCT could be reduced by 30 to 50 percent by administering short-course antiretroviral prophylaxis in the last weeks of pregnancy or at labor and delivery, and by changing breastfeeding practices in HIV-infected women. The urgent challenge is to translate research findings into public health intervention programs, and to link MTCT to surveillance, primary prevention, and care.

Apart from choice of antiretroviral regimen, key issues include access to voluntary HIV counseling and testing (VCT), community support and acceptance, and integration of MTCT interventions into local maternal-child health (MCH) services. In addition, the breastfeeding dilemma remains complex. Breastfeeding should remain the cornerstone of MCH programs. But for HIV-infected women, replacement feeding from birth or exclusive breastfeeding followed by early weaning should be encouraged, where possible. Concerns about replacement feeding include safety, stigma, and negative spillover effects on HIV-negative women, and must be weighed carefully in the local setting.

Following the results of the short-course zidovudine (ZDV) studies, international health agencies have developed a series of guidelines and strategic options for MTCT interventions in developing countries, and UNICEF has taken a leading role in promoting pilot MTCT programs in developing countries. However, only a few programs are currently operational, and these are at early stages.

Recognized Best Practices
UNAIDS, WHO and UNICEF have taken the lead in developing best practice guidelines for MTCT intervention programs based on voluntary counseling and testing (VCT), short-course antiretrovirals, and options related to breastfeeding.

Key interventions

- Routine, simplified voluntary counseling and testing (preferably rapid testing) antenatal, whenever possible (e.g., routine, group pre-test counseling), or at labor/delivery or immediately postpartum, and antiretroviral prophylaxis.
- For women with ANC--Short-course ZDV (beginning at ~36 weeks' gestation), or single-dose nevirapine ("NVP", single dose to the mother at onset of labor and single dose to the infant at 2-3 days of life), or AZT/3TC intrapartum to the mother and one week postpartum to the infant.
- For women with no ANC--Immediate postpartum ZDV (6 weeks) to the infant, or

immediate postpartum nevirapine (1-2 doses) to the infant (no efficacy data available).

- Counseling and alternatives to breastfeeding (status quo: early, exclusive breastfeeding)--Replacement feeding from birth or early exclusive breastfeeding, followed by early weaning at 4-6 months.

Related interventions

A successful HIV MTCT prevention program will strengthen basic antenatal MCH services, be linked to other key HIV primary prevention and care programs, be easily monitored and evaluated and include these elements:

- Community MTCT mobilization (information, education, and communication: IEC).
- Primary prevention in adolescents and young adults.
- Basic ANC services (multivitamins with iron, syphilis screening and treatment, tetanus immunization, etc.).
- Family planning counseling.
- Maternal and infant HIV care--OI prophylaxis (eg. co-trimoxazole and INH) or antiretroviral therapy (if and when available).
- Basic data system and technical capacity for monitoring and evaluation--Maternal HIV prevalence, acceptance and coverage of intervention, effectiveness (in targeted subpopulations).
- Infant laboratory testing (EIA and /or PCR, in a subset of infants, to allow for focused evaluations)

Applying Best Practice Guidelines to Real-World Settings

Capacity for implementing MTCT HIV intervention programs will vary considerably, based on level of antenatal care, whether births occur mostly in medical facilities or at home, and potential for replacement feeding. Although the goal should be to raise the level of care and infrastructure to setting 1 (below), which represents current best practice, pilot evaluations and operational research are needed for other settings common in Africa (settings 2-4 represent some of the common scenarios).

Best practice

Setting 1) Good ANC, acceptance of antenatal HIV interventions, safe water supply, and safe alternatives to breastfeeding (largely urban Africa): Routine antenatal VCT, short-course ZDV, AZT/3TC or NVP, and replacement feeding for women who choose not to breastfeed.

Potential strategies for pilot evaluation

Setting 2) Fairly good but limited ANC (>75% access), low level obstetric services (predominantly home deliveries with traditional birth attendants), no safe water supply, and/or maternal decision to breastfeed (common scenario for rural Africa): Active IEC and routine VCT to support intervention, ZDV or NVP self-administered or by some form of directly observed therapy, promotion of early weaning where possible. Operational evaluations of this scenario are urgently needed.

Setting 3) Weak ANC, stigma and barriers associated with ART and replacement feeding: Rapid testing at delivery, targeted NVP to mother in labor (if possible) and to infant

immediately after birth.

Setting 4) Weak ANC, very high prevalence (>20-30%): Routine nevirapine to all delivering women and newborns, followed by testing and counseling where possible, and recommendations on feeding options.

CDC Experience and Capabilities

In the U.S., CDC has responsibility for U.S. Public Health Service recommendations and for monitoring their implementation, and is now leading a domestic perinatal HIV elimination initiative. Internationally, CDC has conducted collaborative, state-of-the-art perinatal HIV research in Zaire, Cote d'Ivoire, and Thailand. A CDC Abidjan field project collaborates directly with MOH and FSTI to implement MTCT program at clinic sites and includes FSTI support for ongoing maternal antiretroviral therapy.

CDC has been working actively to help implement and evaluate MTCT programs. In Thailand, CDC worked with local collaborators to implement short-course ZDV in Bangkok, and has been working closely with the MOPH to help implement a regional MTCT program that will serve as the basis for a national program. In Côte d'Ivoire, CDC is working with the MOH and FSTI to help establish short-course ZDV as standard care at selected clinical sites.

CDC is also actively collaborating in the international MTCT implementation effort in the following ways:

- Participating in the UNAIDS informal perinatal working group.
- Providing technical assistance to UNAIDS to develop monitoring and evaluation guidelines for MTCT pilot intervention programs.
- Providing technical assistance to UNICEF to help in implementing and evaluating MTCT pilot projects (CDC technical assistance to UNICEF pilot projects includes Botswana, Rwanda and Zimbabwe).
- Consulting with Global Strategies for HIV Prevention and the Pediatric AIDS Foundation.

CDC Approach

The objective of the MTCT LIFE initiative is to help implement feasible, sustainable interventions to decrease HIV MTCT in developing countries, and to assure that these interventions are integrated within MCH programs, strengthen antenatal care, promote the health of the mother, and enhance HIV prevention programs at the family and community level.

Illustrative Activities

1. Help develop and review MTCT pilot and national plans.
2. Help develop, implement and monitor antenatal or labor/postpartum VCT program.
3. Help develop and implement core database for basic monitoring of MTCT program.
4. Provide training in basic MTCT intervention components.
5. Assist in regular monitoring and evaluation.
6. Help coordinate MTCT support activities of other collaborating support agencies or partners: (UNICEF, UNAIDS, WHO, USAID, FSTI, NGOs, et al).
7. Assist with establishing essential laboratory capacity and quality assurance (QA) (e.g.,

rapid testing, ELISA, infant PCR testing in selected situations).

8. Assist with community IEC to promote community understanding and support for MTCT program.
9. Infrastructure support - personnel
    - Support for national and/or local MTCT personnel.
    - Training (in-country, regional, and long-term overseas).
10. Infrastructure support – physical plant
    - Help build/renovate key facilities needed for MTCT (e.g.,, group counseling rooms with video, private counseling rooms, ANC exam rooms, simple laboratory in antenatal clinics and labor and delivery wards for rapid testing).
    - Local computer capacity/networking/Internet.
11. Procure reagents, commodities, supplies needed for intervention (e.g., laboratory test kits, antiretroviral drugs, infant formula).
12. Facilitate training and linkages with NGOs and CBOs to mobilize support for HIV-infected women.
13. Assist with breastfeeding and replacement-feeding counseling.

Technical Considerations
Although the primary interventions for MTCT might appear relatively straightforward, clear guidelines and appropriate training are needed to ensure that the interventions are offered in a reliable, consistent and locally acceptable manner. Standardizing each phase of the intervention is critical, as is assuring a realistic personnel plan for program management and delivery.

Priorities:
- Local guidelines for each phase of the intervention (based on implementation manual).
- Support and education materials for both clinic and community (posters, pamphlets, radio, videos etc.).
- Basic data monitoring system (simple, integrated with other local data, locally manageable, able to provide timely feedback).
- Quality assurance for HIV testing, including rapid testing and, where applicable, PCR testing of infants to determine outcome.
- A realistic personnel plan including training, refresher programs, and support.
- A realistic management plan to implement and sustain the intervention.
- Develop primary prevention plan to support HIV-negative women and reduce risk of incident infections during pregnancy and postpartum during breastfeeding.
- Screening, treatment, and prevention of STIs during pregnancy.

Operational Considerations
- Bring in full-time or part-time in-country MTCT advisor, with technical back-up from CDC-based consultants or supervisors.

- Integrate MTCT plan in-country as part of a national AIDS plan.
- Where UNICEF-supported MTCT pilot projects have begun, clearly define specific roles of various supporting agencies to assure coordination and maximum effort.
- Develop a strong IEC strategy.
- Where possible, integrate the MTCT intervention within existing health care systems. If additional personnel are needed (e.g., laboratory technicians, counselors, outreach workers), identify needs and plan for recruitment, training, and integration within current systems.
- Assess the feasibility of replacement feeding for HIV-infected women, and address concerns related to safety and possible stigma.
- As new MTCT data become available, reassess intervention strategies.

Resources
The GAA MTCT program will draw upon the expertise of a wide range of CDC staff already working on MTCT projects and participating in CDC's Informal International Perinatal Working Group. Atlanta-based experts will be available to provide support to in-country GAA assignees, collaborators from other agencies, and directly to local MTCT leadership.

Key partners

Côte d'Ivoire MOH and FSTI:

UNICEF

UNAIDS/WHO/UNICEF

Ministries of Health (MOH)

National AIDS Control Programs (NACP)

HIV/AIDS and Maternal-Child Health Divisions.

USAID, and its main health subcontractors (FHI and Population Council/Horizons) are working on MTCT implementation/operations research projects in several countries (e.g., Horizon project in Kenya).

PAF: The Elizabeth Glaser Pediatric AIDS Foundation has been a strong leader in domestic MTCT and is now focusing on international MTCT, particularly with nevirapine (NVP). It is in the process of awarding $1 million of grants for pilot NVP projects, and is likely to receive greater funding itself from private foundations to further promote this work.

U.S. schools of public health and NIH Fogarty Center

World Bank

NGOs and CBOs

Monitoring and Evaluation
Substantial efforts already have been undertaken to define key indicators, and a summary document on MTCT M&E is being finalized by UNAIDS. (Please see Strategy 3.3 for details.)

GAA monitoring and evaluation would focus most on outcome and performance markers for

programs. The highest priority would be monitoring of coverage and uptake. The second priority would be medical and social impact ("program effectiveness"), which could be assessed in selected samples (e.g., transmission rate/infection rate in a sub-sample), and by focused, qualitative assessments (e.g., community support, feeding practices, stigma).

Evaluation of MTCT pilots and programs should be based on program objectives, defined as part of the review and development of country programs. MTCT program objective examples:

- Antenatal care to >75% of childbearing women.
- HIV VCT to >95% of women seen in antenatal care settings.
- Provide >75% of HIV-infected women with an effective MTCT antiretroviral regimen.
- Reduce early MTCT HIV transmission (as measured at 2-4 months) to <10-15%
  - Final rate (at 18-24 months) of <10-15% in areas offering replacement feeding.
  - Final rate of <20-25% in areas that cannot offer replacement feeding, and in the absence of other interventions.

Site/Clinic Level Indicators

Number of deliveries
Proportion receiving HIV testing
Number and proportion of women treated
Medical and social impact—
    HIV/AIDS in children
    Infant and child mortality
    Feeding practices
    Acceptance, community support
Administration, logistics, supplies
Cost
Health information systems for ongoing monitoring

2.3 Blood Safety

Background
In the early stages of the epidemic, many countries strengthened their ability to improve blood safety with support from international donors to cover the costs of HIV screening. Unfortunately, many donors have redirected their funding to other prevention programs leaving blood safety programs decidedly vulnerable. Many developing countries are forced to rely on emergency donations from paid donors or family members. But family blood donations are often at increased risk for HIV and other infectious diseases, and are usually unavailable to patients as quickly as needed for emergencies.

Fifteen years after a screening test for HIV was developed, reducing the transmission of HIV and other infectious diseases by blood transfusion remains a serious public health challenge in many developing countries. Throughout sub-Saharan Africa, blood transfusions are used in young children for the treatment of malaria-associated anemia, among women for treatment of anemia associated with pregnancy or complications of pregnancy, and as is the case elsewhere, in the general public for trauma and surgery. In many African countries, HIV and hepatitis infection among blood donors is extremely high. The high prevalence of infectious diseases among blood donors, coupled with the frequent use of transfusion, makes blood transfusion a serious, yet preventable, public health problem.

Recognized Best Practices
A few countries in sub-Saharan Africa have developed blood programs that have improved the safety and availability of blood. These programs address the key issues of reducing demand for blood transfusion, increasing the supply of blood from donors at low risk for infectious diseases and ensuring the quality and safety of the blood supply through rigorous laboratory testing and quality control of the entire process from donor recruitment to transfusion. Another benefit has of increasing blood supply and quality has been considerable cost savings.

CDC Experience and Capabilities
CDC has been involved in blood safety in the U.S. and internationally since the early days of the HIV/AIDS epidemic.

CDC has strong experience in epidemiological studies that can determine the safest groups of blood donors to target for recruitment and is well placed to provide up-to-date laboratory support both for blood screening and quality assurance.

CDC Approach
Support comprehensive blood safety programs based on country needs to build or strengthen a national blood transfusion service, improve the safety and quality of the blood supply, decrease the demand for blood transfusion, and increase the supply of blood from low-risk volunteer blood donors.

Illustrative activities

1. Strengthen blood transfusion service by supporting the following:
    - Training visits to countries with successful programs, such as Uganda and Zimbabwe.
    - Training in managing national blood transfusion service.

- Developing information management systems.
- Developing national policies regarding blood transfusion.

2. Improve the safety and quality of the blood supply
   - Evaluate screening tests; expand use of rapid tests in appropriate settings.
   - Strengthen capacity for pre- and post-screening counseling.
   - Support comprehensive quality assurance programs.
   - Procure test kits and reagents for blood screening and processing.
   - Procure equipment and supplies for blood banks.
   - Train laboratory staff.

3. Reduce the demand for blood transfusion
   - Assist in developing clinical guidelines for blood transfusion.
   - Support training for clinicians in appropriate use of blood transfusion.
   - Promote access to and use of crystalloids as an alternative to blood transfusion for acute blood loss.
   - Assist in programs to prevent severe anemia in children and pregnant women through prevention, detection, and effective early treatment of malaria, nutritional deficiencies, and complications of pregnancy.
   - Improve laboratory capacity to measure hemoglobin in outpatient and inpatient settings.

4. Increase the supply of blood from low risk donors
   - Conduct epidemiological studies or obtain data from ongoing surveillance programs to identify low risk groups to target for blood donor recruitment.
   - Assist in developing volunteer blood donor education and mobilization programs.
   - Assist in developing self-referral programs for donors who are at high risk for transmitting HIV and other infectious diseases.

Technical Considerations
Key to a successful and sustainable blood safety program is strengthening the infrastructure in countries. Supplying test kits alone is not sufficient to improve the safety, availability, and utilization of blood. Working with other donors to combine efforts for a comprehensive strategy will be necessary.

Operational Considerations
Fully functional blood banks with donor recruitment programs are essential to both a safe and adequate blood supply that is used appropriately. Where these are not available, the use of rapid tests must be

considered to ensure that safe blood can be supplied immediately on demand. Hospitals must have rapid test kits regularly available and ensure that they have been stored properly.

Resources

Organize exchange visits with blood transfusion services in other countries. Linking blood transfusion services with U.S. partners may provide a valuable exchange mechanism.

- GAA support
  - International Activities Branch (IAB)
  - NCHSTP
  - CDC
  - Laboratory support team, CDC
- In-country support
  - Red Cross
  - NACP

Key Partners

- U.S.
  - American Red Cross
  - Fogarty International Foundation
  - National Heart Lung and Blood Institute
  - American Association of Blood Banks
  - USAID
  - International Consortium on Blood Safety
- International
  - WHO Blood Safety Unit
  - International Red Cross
  - European Union AIDS Task Force.

Monitoring and Evaluation

- Number of blood units collected at hospitals for emergency transfusion
- Number of discrepant HIV test results detected through validation testing
- Prevalence of HIV in newly recruited blood donors
- Number of blood units collected from voluntary unpaid donors
- Proportion of blood requests that the blood bank is able to meet

2.4 STI Prevention and Care

Background
A strong link exists between sexually transmitted diseases or infections (STIs) and the sexual transmission of HIV infection. (**Note:** These strategies employ the acronym STI, for sexually transmitted infection, rather than STD, for sexually transmitted disease. The terms are for the most part interchangeable, but STI is the preferred term internationally.) An untreated STI can exacerbate both the acquisition and transmission of HIV by up to tenfold. Thus STI treatment is an important HIV prevention strategy for both high risk and general populations. The predominant mode of transmission of HIV in sub-Saharan Africa, as for other STIs, is sexual. Almost all the measures for preventing sexual transmission of HIV and STI are the same, as are the target audiences for intervention. Clinical services offering STI care are also an important access point for people at high risk for HIV, not only for diagnosis and treatment but also for information and education.

Recognized Best Practices
1. A comprehensive Apublic health package@ should include the following components:
   - Promote risk reduction behaviors, including use of condoms.
   - Manage patients with STI and their partners.
   - Intensify interventions in population groups at highest risk.
   - Locate and treat cases of syphilis in antenatal populations.

2. The traditional method of diagnosing STIs is by laboratory tests which are often unavailable or too expensive. For this reason, the syndromic approach was developed, consisting of these elements:
   - Classify the main causal pathogens by the syndromes they produce.
   - Use flow charts to guide the management of a given syndrome.
   - Treat the syndrome, covering all the pathogens with potential to cause grave manifestations and consequences.
   - Refer and treat partners.

Data from Mwanza, Tanzania, where a random control trial examined the impact of syndromic case management for symptomatic STIs at primary health care facilities, showed a reduction of 42 percent in the incidence of HIV infections. The cost per case of HIV infection prevented was $218. The data from Mwanza strongly suggest that improved STI treatment services are both effectual and cost-effective and should therefore be promoted as an essential component of HIV/AIDS prevention and care activities.

CDC Experience and Capabilities
CDC has provided long-term assignees and short-term consultants to Ministries of Health, NGOs and multilateral and bilateral organizations such as USAID, UNAIDS, and WHO. Collaborating countries include Bolivia, Central African Republic, Cambodia, Indonesia, Mali, Russia, South Africa and Thailand. Activities have been undertaken in these areas:

- Protocols to evaluate the effectiveness, acceptability and coverage of quality STI care.
- Syndromic case management algorithms and treatment guidelines, including evaluations to validate country-specific procedures.
- Training materials for health workers and clients.
- Training in syndromic case management, including partner services, for trainers and front-line health workers.
- Monitoring systems for program evaluation and supervision.
- Innovative projects for access and care of high frequency transmitters (i.e. commercial sex workers [CSWs], truckers, etc.).
- STI laboratory development.
- Designing and implementing behavioral evaluations, including of sexual networks and STI biomarkers.
- Evaluating health-care-seeking behavior of persons with STIs.

CDC Approach

Based on country needs, available epidemiologic and behavioral data, and ongoing activities by other partners, CDC will focus on implementing the following interventions, in order of priority:

- Comprehensive case management (diagnosis, treatment, risk reduction counseling and provision of condoms) of population groups at highest risk of infection (e.g., CSWs, truckers, adolescents).
- Comprehensive case management for patients with STIs and their partners integrated into routine primary health care and/or other health care delivery settings.
- Promote appropriate health care-seeking behavior.
- Promote risk-reduction behaviors such as condom use, partner reduction, abstinence, fidelity, etc.
- Prevention and care of congenital syphilis.
- These interventions will be supported as needed, by:
  - Collecting, analyzing and using behavioral and clinical data.
  - Establishing or strengthening basic laboratory services.

Illustrative Activities

1. Interventions focused on high-risk populations - Establish quality services for STS care and condom promotion.
2. Improved STI case management provides an important opportunity for prevention given the current structure of the public health system in many countries. The syndromic approach to STI management is both viable and pragmatic. Although procuring and distributing STI drugs may be costly, the benefit of reducing STI prevalence is significant.

3. CDC will assist in: 1) training providers in the overall rationale, utility and correct use of syndromic management with the appropriate flowcharts, 2) procuring and managing effective drugs, 3) developing a system for monitoring antimicrobial resistant strains, 4) validating syndromic algorithms, 5) designing and implementing effective partner services, and 6) developing protocols for risk reduction counseling and education.
4. Promoting health care-seeking behavior including surveys to determine why, where and when people seek STI care and working to make quality services appealing such as training health care workers to make STI services private and confidential. STI service utilization shows impressive increases in response to educational strategies. In terms of educational interventions, individuals with STIs constitute, by definition, a high-risk group for HIV infections. STI clinic attendees represent a logical audience for HIV prevention efforts, both because of the opportunity to provide individual counseling and because STI infection makes tangible an otherwise abstract discussion of sexual risk. Clinic-based counseling and education may thus have a greater potential to influence high-risk behavior than popular or community-based education.
5. **Provide "adolescent-friendly" services -** Current STI and Reproductive Health Programs do not as a rule attract adolescents who require care. Adolescents, unless they are pregnant, make minimal use of primary health care facilities and are inclined to seek treatment for sexual health concerns in the informal sector where inappropriate or inadequate management may result. Providers should be trained in the appropriate ways to talk with, examine and counsel adolescents. In addition, pilot projects are needed to determine how best to effectuate care for adolescents.

Technical considerations

Building the foundation for improving care at points of first encounter requires intensive efforts at the policy and program management levels. Engaging the commitment and resources of public health officials and STI program managers and providers demands significant technical assistance and consensus building.

Country policies related to STI programs often pose substantial barriers to STI control and prevention—such as charging fees to poor women for STI testing, informing brothel owners of the HIV status of CSWs, and denying services to adolescents. Developing symposia, reporting, and conducting joint policy analysis with the appropriate local providers and policymakers will enhance efforts and reap the intended outcome of improved STI prevention and control.

- Conduct an initial assessment to determine the baseline level of care provided. These data can subsequently be used to evaluate improvements in care.
- Ensure availability of medication and condoms in all treatment centers.
- Establish and maintain a logistical management system that allows medications and condoms to be distributed as needed, avoiding the problem of stock depletion.
- Trained teams regularly supervise the health centers.
- Supervisors should ensure continuous direct contact with their staffs to identify and understand any problems that may arise during admission, diagnosis, explanation of treatment, and in

counseling. Early detection and correction of difficulties in the system can prevent repeated infections

- Biological evaluations of STI prevalence and antibiotic susceptibilities are essential to building consensus on national STI treatment guidelines. The local data these evaluations generate can help persuade STI program managers and health care providers to adopt the syndromic approach to STI case management.
- Ensuring that STI drugs are available at the primary health center level demands political commitment from the top, a strong logistics management system and an educated staff at the clinic level.

Operational Considerations

Educational campaigns must address the general population=s lack of understanding of the term ASTI,@ the overall poor knowledge of STI signs and symptoms, the link between STIs and HIV transmission, and low rates of treatment and partner referral. Education should use terms familiar to target populations rather than medical terms, which are often confusing.

STI treatment-seeking behavior is poor, with a high percentage of individuals receiving treatment through pharmacies, treating themselves or not treating suspected STIs. Contact tracing and partner referral rates are low. Many medical establishments have resisted implementing syndromic management protocols. Further intervention is needed to improve levels of syndromic management and to reinforce STI counseling, particularly among private sector practitioners.

A large percentage of symptomatic men continue to seek STI treatment outside clinics. This population is an important target group for future service delivery efforts. Training pharmacists in STI syndromic management is one approach, but strategies should also be developed to increase the numbers of men visiting STI and primary health clinics. Innovative approaches are needed such as the AMSTop@ project in Cameroon, whereby kits for urethritis are distributed to men visiting pharmacies for treatment. These kits contain condoms, partner referral cards and antibiotics to treat chlamydia and gonorrhea. Given that self-treatment is so common, social marketing of STI drugs at pharmacies should be considered.

Procedure evaluations and consensus-building activities with STI providers at the country level are essential to sustain the public-health focused, syndromic approach to STI control. These activities require resources and time. In many countries, the major constraints to program implementation are a lack of effective STI drugs or local data to use in persuading STI program managers and service providers to follow the recommended procedures. This issue can be addressed by conducting evaluations, such as CDC has done in the Central African Republic and Mali. Addressing the lack of effective STI drugs will require intensive efforts by the donor community and ministries of health.

A comprehensive approach to the improvement of STI case management and surveillance must include training private sector STI health care providers. In Sub-Saharan Africa and India, private sector providers treat many STI patients, but these providers often do not accurately report surveillance data. To improve surveillance of the HIV/AIDS epidemic, and to encourage the appropriate treatment of STI patients, private sector providers must be included in STI capacity-building efforts.

Resources
Please see Appendix B for suggested readings.

Key partners

National STI and HIV Program Managers
Regional STI Advisor, Regional Office of Africa (AFRO) of WHO, Harare
WHO Representatives in participating countries
UNAIDS local and regional advisors
EU and other donor representatives who contribute to STI programs
Other USAID contracting agencies

Monitoring and Evaluation
Experience in M&E of STI programs is deeper than with most other areas of HIV-related programming.

Monitoring STIs is especially important because: 1) STIs significantly increase the chance of HIV transmission per act of unprotected sex between an infected and an uninfected partner; and 2) At an impact level, STIs can be used as a proxy measure for the impact of HIV prevention programs because STIs are a marker of unprotected sex with a non-monogamous partner. But because bacterial STIs are, unlike HIV, curable, new cases are likely to reflect much more recent sexual activity than HIV, which can indicate risk behavior as long as a decade earlier. HIV prevention programs must have a visible impact on STIs before any significant changes in HIV prevalence can be seen.

1. Service Indicator 1 – Appropriate diagnosis and treatment of STIs--This indicator reflects the success of training combined with efforts to ensure adequate supplies of drugs and necessary materials. It tracks changes in adequate care for patients seeking care for STIs.
2. Service Indicator 2 – Advice to STI patients on prevention and referral to testing services-- STI services seek not just to treat STIs but to prevent their recurrence by promoting condom use and by encouraging the treatment of partners to avoid re-infection. Increasingly, STI care is seen as an entry point for referral to voluntary counseling and testing for HIV. This indicator measures the extent to which these aspects of STI service provision are functioning.
3. Service Indicator 3 – Drug supply at STI clinics--Drugs necessary to treat each of the important STI syndromes should be included in the stock-check of clinics for this indicator.
4. STI Service Indicator 4 – Men and women seeking treatment for STIs--This indicator tracks changes in care-seeking behavior among men and women who believe they may be STI infected, following initiatives to promote health-seeking behavior.

2.5 Youth Technical Strategy

Background
Every day 7,000 young people worldwide acquire HIV. This translates into 2.6 million new infections a year among young people--two million of them in Africa. Of the 30 million people alive today with HIV infection or AIDS, 10 million are young people ages 10-24. For older children and young people in Africa, the main source of HIV infection is unprotected sex (intercourse without a condom).

AIDS has also caused a sharp escalation in the number of orphans in Africa in the past few years. Whereas around two percent of the child population in developing countries globally was orphaned before the appearance of AIDS, today AIDS has made orphans of 11 percent of all children in Uganda and nine percent in of Zambian children.

A variety of factors place young people at increased risk for HIV infection, not the least of which is adolescence. Puberty is a time of discovery, emerging feelings and exploration of new behavior and new relationships. Sexual behavior can involve risks; the same is true of experimentation with substance use (including alcohol), illicit drugs, and other substances.

Any approach to HIV prevention among young people should acknowledge that at one time or another youth can find themselves in an "at-risk" situation, that some youth are episodically at risk, and that many youth are continually at risk.

Global research on young people and HIV/AIDS has changed little throughout the pandemic. The global literature on this topic is familiar in several respects:

- Many studies have been undertaken in a number of countries to examine young people's knowledge, attitudes, practices, and behaviors. However, these studies have been conducted largely among accessible youth populations such as in-school youth.
- Young people themselves are almost absent from most research (Please see suggested readings, Appendix B).
- Many programs and efforts targeting young people are information-based and few are designed as in-depth behavior change efforts targeting youth in continued-risk environments.
- Sixteen years into the pandemic, the need for detailed accurate information to guide HIV-prevention programs remains unfulfilled.
- Few examples exist of comprehensive health and holistic prevention programs.
- Few programs (outside of food relief) have been developed to meet the needs of orphans and vulnerable populations of young people.
- Infrastructure is weak worldwide for responding to the special needs of young people.
- Significant cultural barriers and restrictive policies hinder reaching young people with effective prevention programs and messages.

- Young people often do not have access to protective barriers like condoms or to youth-friendly STI, HIV or reproductive health services and treatments.

Recognized Best Practices
Young people need programs that are designed specifically, developmentally and culturally for their age group. Cooperation at all levels is needed to create the environment that will enable young people to maximize their potential.

- Projects and programs that can reach broad segments of young people - such as public information efforts.
- Efforts that link young people who are vulnerable or at increased risk to HIV infection, to services or programs like voluntary counseling and testing.
- Projects that are personalized, extensive, and provide ongoing contact and follow-up for behavior change such as prevention case management.
- Programs and projects that produce sustained risk-reduction strategies.

CDC Experience and Capabilities
Perhaps CDC's greatest strength is its ability to coordinate coalitions for comprehensive responses and to work closely with community organizations to transfer "state-of-the art" programs into actual front-line efforts targeting young people. CDC has strong youth-focused experience in the U.S. and internationally through its state-of-the-art HIV/AIDS surveillance efforts, conducting descriptive research among higher-risk populations and designing, testing, and evaluating interventions for young people.

In 1994 CDC launched a comprehensive Prevention Marketing Effort that attempted to move beyond mass-market approaches and focus more on segmented targeting with behavior change models. In conjunction with USAID, CDC can provide interested communities with assistance in social marketing techniques. The Division of Adolescent and School Health has worked in multiple countries providing assistance to ministries of education in teacher training and curriculum development. Family life-skills training has been researched and tested at CDC and could build on the Labor Responds to AIDS program (LRTA).

CDC has designed and implemented opinion leader and peer-led- programs in a variety of settings. Many of these programs targeting young people address multiple issues like violence, substance use/abuse, and responsible sexual behaviors.

CDC Approach
CDC strongly advocates including young people in planning, implementing and evaluating programs and services intended for their use.

Illustrative Activities
Technical assistance is available from CDC to design, implement and evaluate the following types of youth programs:

1. Convenient, easily accessible, developmentally appropriate and culturally competent programs that address the multiple needs of young people--peer prevention programs, popular opinion leader interventions, network interventions, services like voluntary health service-linked HIV counseling and testing, reproductive health services, STI diagnosis and treatment.

2. Prevention programs with a holistic approach that promote safer behaviors (e.g., media interventions using radio soap-operas, such as in Ghana), build skills (e.g., safer sex negotiation), and nurture healthy behaviors (e.g., popular opinion leader interventions) and allow for self-realization and empowerment (e.g., project AIM—a project designed to enhance self-esteem and self-confidence in young women with one goal being the delay of first sexual intercourse).
3. School-based, community supported HIV prevention education.
4. Research, focusing specifically on young people, which encompasses epidemiological, behavior, social settings, laboratory, and surveillance to create age and culturally appropriate programs.
5. Family-based and community-based comprehensive health programs that include related public health issues such as prevention of STI, HIV, pregnancy, violence, and substance abuse, through businesses, faith communities, and other social venues.
6. Youth-focused public information and social marketing efforts that promote healthy behavior and provide access to condoms, STI services, reproductive health services, and health-service linked voluntary HIV counseling and testing.
7. Youth-focused service organizations that promote development among vulnerable young people, including orphans, and teach skills along with health promotion.
8. Programs and services that target pre-adolescents through schools and youth- serving organizations. Efforts to reach out-of-school youth can be undertaken through training of traditional youth providers like Boy and Girl Scouts, Boys and Girls Clubs and community centers. Training should include family life-skills, refusal skills, and basic HIV education.
9. Work with vulnerable populations such as young women to encourage and empower them and promote good health (e.g., Project AIM).

Technical Considerations
The success of a program depends on strengthening the infrastructure of a country to recognize and meet the needs of young people while coordinating existing youth services. Developing infrastructure that recognizes cultural mores and includes youth-adult partnerships will be a delicate balance. Any and all elements of HIV prevention, surveillance and public health services should recognize the need for youth-focused elements. Young people need programs that are designed specifically for their age group.

Operational Considerations
Strengthen the infrastructure of youth-specific international expertise. Much of the success of any effort will depend on close collaboration and coordination of in-country youth-serving organizations, international youth-focused programs, education and health ministries, and investment by country-level stakeholders including policy makers.

Address the lack of youth-specific data in surveillance in collaboration with other partnering agencies like USAID.

Resources
Multiple U.S.-based publications, technical assistance documents, training, and materials targeting young people exist at CDC. For country-level resources, the most valuable commodity will be young people who are involved in all aspects of efforts targeting them. Others are high-level stakeholders who provide a venue for recognizing the special needs of young people, and providers who care about, like, and have access to young people.

Key Partners

National governments
CBOs
NGOs
UNICEF
USAID
Peace Corps
WHO
FOCUS
FHI Impact
Horizons
Advocates for Youth
PSI

Monitoring and Evaluation

Increase the median age at first sex among young people.
Increase the numbers of young people using condoms at last sex.
Improve a young person's ability to survive and see a more possible future.
Improve schools' and communities' abilities to meet the needs of their youth.
Increase participation of youth in their communities' activities for health promotion.
Increase access to appropriate care services and education services.

Implications for Other Strategies
Many of the other technical strategies must also consider the special needs of youth to take advantage of the opportunities to educate them. For example, many young women will participate in MTCT interventions and many youth will offer to be blood donors. Both of these examples highlight opportunities to relate to youth and the need to ensure appropriate messages.

Hire young people who can be trained for successful completion of tasks and health promotion for all CDC related, funded, and supported activities. For example: with informatics, hiring youth to work with and operate computers, software, and hardware could be a way to teach skills, provide health education, and prepare them for a more productive future. The same strategy could be employed with lab technicians, data collection assistants, and prevention project staff.

2.6 Private-Public Partnerships

Background
U.S. business and organized labor have taken an active role in shaping a partnership between public health and private sector support for HIV prevention. The partnership began as an effort to engage business and labor in addressing workforce education about HIV and its routes of transmission as well as in establishing workplace policies to accommodate HIV in the workplace and within unionized labor. CDC, in conjunction with private sector partners, international foundations and private sector/labor organizations, has created resource materials to address the needs of business and labor.

Best Practices
Please see Appendix B for a list of suggested readings.

CDC Experience and Capabilities
CDC has been involved in public-private partnership since the early 1990s. The Business Response to AIDS (BRTA) and Labor Response to AIDS (LRTA) programs are proven models of workplace education and policy formulation. Recently, the CDC has successfully engaged U.S. business in an effort to internationalize its programs and has developed a model business and labor program in South Africa.

Illustrative Activities

1. Engage Business Sector in HIV/Prevention
    - Support technical assessment of Business climate vis-à-vis HIV/AIDS awareness, willingness to engage in HIV prevention policy and work-place intervention development.
    - Assist in developing business council or coalition to direct private sector partnerships on national and local level and to interface with public sector.
    - Provide technical assistance to develop and adapt workplace policies and prevention intervention for the workforce.
    - Identify international/multi-national partners to support national prevention programs across policy and intervention programs.
    - Assist in developing family education and community outreach components for private sector implementation in conjunction with public health programs.

2. Engage the Labor Sector in HIV/Prevention
    - Support technical assessment of labor unions and labor sector climate vis-à-vis HIV/AIDS awareness and willingness to engage in HIV prevention policy and workplace intervention development.
    - Assist in developing a coalition of labor organizations or identify existing labor coalitions willing to direct labor partnerships on a national and local level to interface with public sector.
    - Provide technical assistance to develop and adapt workplace policies, prevention and

intervention materials for the workforce.

- Provide intensive training of staff and the Education Coordinator, Gender Coordinator and/or the Occupational Safety and Health Coordinator of key unions.
- Identify international/multi-national partners to support national prevention programs.
- Assist in developing family education and community outreach components for labor sector implementation in conjunction with public health programs.

Operational Considerations

Most of the trade unions are just beginning to accept the reality of the epidemic and its implications for the workforce. Case in point: the ILO only drafted a platform for action on HIV/AIDS in 1999. The ICFTU (International Confederation of Free Trade Unions) adopted a platform on HIV/AIDS at its World Congress in April 2000.

- Adopt HIV/AIDS workplace policies. Few businesses have done so. The workplace policy is critical to unions and must be addressed during bargaining and contract negotiations, as it is very difficult if not impossible to include later.
- Assess status of HIV/AIDS related laws. Conduct a country-by-country inventory of the laws preventing discrimination against individuals living with HIV/AIDS in the workplace and reviewing provisions under the medical schemes.
- Measure the impact of HIV/AIDS on future costs to companies.
- Provide counseling and testing and access to treatment and care.
- Establish networks to support workplace and community programs. Currently, neither business nor labor is involved with the HIV/AIDS community or Ministries of Health. Furthermore, there is widespread unfamiliarity and distrust of NGOs on the part of both labor and business.

Resources

In-Country Labor/Union Resources

Botswana

Government:
Mr. Mothusi Bruce Rabasha PALAI
Commissioner of Labour
Department of Labour and Social Security
Gaborone - Botswana

Employees:
Mr. Elias DEWAH
Executive Director
BOCCIM
Gaborone - Botswana

Workers:
Mr. Amos TLHOOLEBE
Regional Chairperson (OHS)
Botswana Federation of Trade Unions
Gaborone - Botswana

Côte d'Ivoire

Government:
Dr. Coulibaly KOUNANDI
Directeur - Medecine du travail
Ministere emploi, fonction publique
et prevoyance sociale
Abidjan - Côte d'Ivoire

Employers:

M. Bah YAO
Membre de la Commission sociale
Conseil national du patronat ivoirien (CNPI)
Abidjan - Côte d'Ivoire

Workers:
M. Sai Pascal GOUE
Secretaure national charge de la sante
Union Generale des travailleurs de Cote d'Ivoire
Abidjan - Côte d'Ivoire

Kenya
Government:
Dr. W.D.O. SAKARI
Director of Occupational Health
Ministry of Health and Manpower
Nairobi - Kenya

Employers:
M. Samso Ebarasi LWAKI
Training Consultant
Federation of Kenya Employers
Nairobi - Kenya

Workers:
M. Joseph BOLO AWACH
Executive Board Member
Central Organization of Trade Unions (COTU)
Nairobi - Kenya

Senegal
Government:
M. Cheikh FAYE
Chef du Bureau Medecine
Ministere du Travail et de l'Emploi
Dakar - Senegal

Employers:
Dr. Fatma Sarr FALL
Medecin - Representante du president
du Conseil national
Conseil National du Patronat (CNP)
Dakar - Senegal

Workers:
M. Aliou TALL
Responsable syndical de la section de la
sante de Pikine
Syndicat national des travailleurs de la
sante publique
Dakar - Senegal

South Africa
Government:
Ms. L. SEFTEL
Chief Director, Labour Relations
Department of Labour
Pretoria - South Africa

Employers:
Dr. James MURPHY
Medical Adviser
Barlow Limited
Sanoton - South Africa

Workers:
Ms. Theodora STEELE
COSATU
South Africa

Uganda
Government:
Dr. David OGARAM
Commissioner for Labour
Ministry of Gender, Labour and Social Development
Kampala - Uganda

Employers:
M. Moses THENGE
Federation of Ugandan Employers (FUE)
Kampala - Uganda

Workers:
M. Justus Odiba CABRIBO
General Secretary, Education Union
National Organisation of Trade Unions (NOTU)
Kampala - Uganda

Zambia
Government:
M. Christopher Chanda PASOMBA
Assistant Labour Commissioner
Ministry of Labour
Lusaka - Zambia

Employers:
M. Sylvester MPILA
Manager
Zambia Federation of Employers
Lusaka - Zambia

Workers:

M. Japhet Chibulo MOONDE
Deputy President
Zambia Congress of Trade Unions
Kitwe - Zambia

Zimbabwe
Government:
Dr. Joseph Nicholas GUTSA
Under-secretary
Ministry of Public Service Labour and Social Welfare
Harare - Zimbabwe

Employers:
M. Joan Zuichaguma MTUKWA
Human Resources Manager
Employers' Confederation of Zimbabwe (EMCOZ)
Harare - Zimbabwe

Workers:
Mrs. Clementine DEHWE
Health and Safety Trainer
Zimbabwe Congress of Trade Unions (ZCTU)
Harare - Zimbabwe

Other/International Resources

Ms. Alice Hamer
Human Resources Development Division
African Development Bank
Abdijan - Cote d'Ivoire

Ms Kerry Kay
Project Manager
Commercial Farmers Union
Harare - Zimbabwe

M. James Sackey
The World Bank
Washington - USA

Ms. Renee Saunders
Public Health Advisor
Centers for Disease Control and Prevention (CDC)
Atlanta, Georgia - USA

M. Fisseha T. Tekie
Country Program Director
American Center for International
Labour Solidarity/SA
Braamfontein 2001 - South Africa

Ms. Mary Chinery-Hesse
Executive Director
Social Protection Sector
ILO - Geneva

M. Ahmar Toure
Deputy Regional Director
ILO Regional Office
Abdijan - Cote d'Ivoire

Ms. Judica Amri-Makhetha
Deputy Director
ILO Area Office - Pretoria

Dr. Benjamin Alli
Senior Occupational Safety and Health Specialist
Safe Work Programme
ILO - Geneva

UNAIDS
Mr. As Sy
Team Leader
Inter Country Team
Eastern & Southern Africa UNAID
Pretoria - South Africa

Ms. Aurorita Mendoza
Health Promotion and Gender Adviser
UNAIDS - Geneva

M. Andrew Timbe
Focal Point HIV/AIDS
NACP - Zimbabwe

Ms. Dorothy Odhiambo
WOFAK
Nairobi-Kenya

UNDP - Regional Project on HIV
Dr. Roland Msiska
CTA Regional Project on HIV and Development
UNDP
Dakar - Sengel

Ms. Zemeney Lakew
UN Special Initiatives on Africa
UNSIA
New York, N.Y. - USA

Mr. Pierre Robert
Private Sector Advisor

Regional Project on HIV Dakar - Senegal
UNDP

Key Partners

International Labor Organization
International Confederation of Free Trade Unions - AFRO
OATUU (Organization of African Trade Union Unity)
World Bank
UNAIDS
USAID
U.S. Chamber of Commerce
Ministries of Labor, Health, Education and Welfare

Monitoring and Evaluation

Measure the degree to which employees experience discrimination in job placement and job retention, including such measures as testing for employment policies and workplace policies regarding accommodation and workplace environment.

Measure knowledge of HIV transmission and prevention in absence of incorrect beliefs, comprehensive knowledge of HIV including care and treatment of STIs and OIs, and knowledge of MTCT and its prevention/mitigation.

In counseling, HIV testing and referral and related risk reduction efforts, measure numbers in the workforce requesting testing and counseling.

Capacity and Infrastructure Development Strategies

CDC will support efforts to strengthen the capacity and develop infrastructure to manage, implement and evaluate national HIV/AIDS programs and monitor trends in the epidemic. CDC has identified the following areas of focus:

HIV/TB/STI surveillance.
Laboratory technical support.
Information management systems.
Monitoring and evaluation.
Training.

2.7 Behavior Change Communications

Background
The importance of behavior change as a major component of any HIV prevention strategy has been recognized since the beginning of the epidemic. One of the most common strategies used by countries has been information, education and communication (IEC) campaigns focused on raising awareness about HIV/AIDS, the behaviors associated with increased risk, and the strategies for avoiding infection and for caring for people with HIV. Many communication campaigns have been implemented in Africa to address HIV/AIDS prevention and education.

However, most IEC activities have been designed for imparting knowledge and information, not for inspiring behavior change. Few strategies meet the needs of women faced with the consequences of HIV infection including information on pregnancy planning, contraception, testing, transmission to a child, breast-feeding, and home-based care. Although many communication strategies are explicitly designed to encourage behavior change, surveys in African countries have shown high levels of awareness of HIV/AIDS, but limited evidence of significant behavioral change resulting from this heightened awareness. This echoes U.S. findings that knowledge is necessary but not sufficient to change behavior.

Face-to-face behavioral interventions, such as peer education and voluntary counseling and testing (VCT), form an important part of the HIV prevention repertoire. VCT interventions can be costly however, and individuals must be motivated to seek these services, which usually reach only a tiny percentage of target populations. Interventions able to reach large numbers of people are also needed.

Recognized Best Practices
A variety of IEC strategies, more recently called behavior change communications (BCC) have been implemented across Africa, ranging from HIV/AIDS media campaigns promoting general awareness to community mobilization activities and interpersonal/small-group communications. Social marketing of condoms and other HIV/STI-related services and supplies, as well as media advocacy and policy advocacy approaches, also fall under the rubric of behavior change communications.

BCC activities constituted a major component of the global AIDS Control and Prevention (AIDSCAP) Project, funded by USAID from 1991-1997. AIDSCAP supported such activities as radio call-in shows, peer education activities, videos, musical revues, and comic book and television serial dramas. Likewise, social marketing for AIDS prevention has employed mass media, community events, and interpersonal communications to bring consumers face-to-face with products through a combined "provide supplies and create demand" approach.

Experience gained highlights the importance of:

- Research to ensure that communications-based activities are responsive and specific to target audiences.
- Identifying barriers and promoting supportive environments to implement interventions.
- Linking behavior change communications to services and supplies.

- Using multiple channels of communication and clear links to services and other sectors.

Entertainment-education media are a proven strategy for reaching large audiences at low cost while simultaneously fostering behavior change. One approach that has shown particular promise, and that has recently demonstrated behavioral impact in Africa, is the use of long-running serialized dramas on radio using a methodology developed by Miguel Sabido of Mexico. A Sabido-based program broadcast in Tanzania from July 1993 through the end of 1999 resulted in 82 percent of treatment area listeners beginning HIV/AIDS prevention behavior after listening to the program.

Miguel Sabido for decades was Vice-President for Research of Mexico's largest broadcast network, Televisa, where he pioneered long-running telenovelas (melodramatic television novels or soap operas) in which characters gradually emerge as role models for the behaviors that promote health and social development. The programs he produced were among the highest rated serialized dramas on Mexican television. Based on the social learning theory of Stanford University psychologist Albert Bandura, these programs create positive, negative and transitional characters for the behaviors and values promoted and show the consequences of various choices. His method has been successfully adapted in Asia, Africa and Latin America, and has proven effective in behavior change for such causes as reproductive health, AIDS education and elevating the status of women.

In developing such dramas, resources in the target community must be assessed, cultural influences on the target behaviors researched, and local practices and customs acknowledged.

The Sabido methodology of entertainment education has been particularly effective in influencing behavior because it focuses on both cognitive and emotional factors. Audience members identify with the characters and these characters become effective role models by demonstrating the steps needed to adopt new behaviors. The characters' lives are beset with problems and they demonstrate the barriers that audience members are likely to encounter in changing specific behaviors. For example, characters can portray people living with HIV/AIDS, affected family members and care givers, and can model attitudes and behaviors that promote compassion, appropriate care, and reduction of stigma toward people with AIDS. Characters and dramatic situations can also depict individuals and couples seeking HIV testing services, STI information, ways to offset mother-to-child HIV transmission and many other important health-related behaviors.

A potentially powerful adjunct to a mass media entertainment-education intervention is to involve and mobilize credible members of the target community to endorse and support behavior changes among their own peer, family and social networks. Besides helping individuals initiate behavioral changes, community-level interventions support macro-social normative changes necessary for sustaining personal behavioral change.

Entertainment-education mass media have been underutilized, and examples of projects that link entertainment mass media with face-to face interpersonal communication are especially scarce. However, a coordinated approach of entertainment-education and interpersonal/community mobilization activities may be the most effective way to reduce HIV risk behaviors. Uniting the two approaches empowers community members to support and reinforce changes modeled in serialized dramas by initiating discussions with peers, leading discussion groups, distributing brochures and/or condoms, etc. Consequently, linking entertainment-education mass media communications with an interpersonal

component can be a powerful and cost-effective way to change HIV-related risk behaviors. Additionally, linking communication strategies with increased access to condoms and other appropriate supplies and services could make a significant contribution to reducing HIV infection and transmission.

Please see Appendix B for suggested readings outlining best BCC practices.

CDC experience and capabilities

Since the earliest days of the HIV/AIDS epidemic, CDC scientists have participated in and provided technical assistance on designing, implementing and evaluating individual, small-group, and community-based intervention strategies for the prevention of HIV/STI and unintended pregnancy. Under USAID and other international agencies, CDC has also provided short-term technical assistance and long-term assignees to numerous countries and behavioral scientists to WHO and USAID to support activities in HIV prevention and reproductive health.

CDC and its partners can provide technical expertise to assist several aspects of the proposed project:

- Develop a seminal research plan to assess country needs.
- Design behavior change communications strategies.
- Develop behavioral surveillance and sentinel surveys.
- Generate manuals, training materials, and capacity-building activities.
- Implement selected behavior change communications strategies.
- Develop protocols to evaluate impact and provide feedback for programmatic activities.
- Disseminate lessons learned upon project completion.

CDC Approach

- Seek participation and collaboration at all levels (ministries of health, other governmental and non-governmental organizations, UN agencies, other partner organizations and other non-African partners).
- Tailor communication strategies to each country's needs
    - Target changes in behavior and social norms by 1) influencing social and cultural factors that affect behavioral norms and personal standards, 2) removing personal and environmental impediments to behavior change, and 3) increasing personal efficacy, or the belief that change is possible.
    - Integrate HIV/STI and reproductive health issues, stimulate women's and men's motivation and commitment to seek those services (e.g., VCT, STI treatment, family planning), reduce risky HIV-related behaviors, and adopt safe reproductive health practices.
    - Use the Sabido methodology of entertainment-education (see above).
- Collect data through 1) formative research for intervention development and assessment of sustainability; 2) carefully documenting and monitoring intervention activities for feedback, technology transfer and capacity building; 3) short and long-term evaluation of behavioral and social normative change, including behavioral and sentinel surveillance activities, qualitative and

quantitative studies; and 4) assess the integration and institutionalization of key intervention components.

CDC will work intensively with local governmental, non-governmental and other partners to help establish or enhance behavior change communication activities in up to three countries in the first year, adding countries in subsequent years.

CDC will work with relevant partners to promote analyzing, disseminating, and using evaluation data from intervention activities, as well as developing training materials and carrying out capacity-building efforts.

Illustrative Activities

1. Country level: Minimal Behavior Change Communications Package--Assist in designing, implementing and evaluating an HIV behavioral intervention using the Sabido methodology of entertainment-education.

   Examples of activities:

   - Conduct situation analysis (e.g., review the available HIV/AIDS surveillance data; review existing social and behavioral data and reports; identify key target groups; assess structure and availability of relevant HIV-related services).
   - Assess barriers to effective use of the mass media for promoting HIV/STI prevention (e.g., audience access to radio, broadcast reach, number of languages broadcast, key leader attitudes, continuity of broadcast personnel and funding at participating radio stations).
   - Assist in creating an advisory committee with representatives of relevant ministries, NGOs and other institutions to ensure that producers have appropriate information and to help promote the HIV-related health services infrastructure through the media program.
   - Collect qualitative data on psychosocial and cultural factors influencing attitudes and behavior in target populations, and identify key themes and behavior change goals.
   - Develop and conduct training for broadcasters and writers using research to inform script development; develop and pilot test several episodes; refine and move to full production schedule.
   - Link radio drama to relevant community services through informational epilogues following specific episodes.
   - Provide on-going technical assistance to writers and producers; convene periodic meetings of technical advisors to review program content; conduct on-going data collection to provide feedback to producers/writers.
   - Assess program impact on target behaviors (including identifying multiple data sources for program impact evaluation).
   - Develop and pretest data collection instruments. Establish appropriate links to services to track utilization of various services.
   - Collect data periodically to evaluate impact of program on attitudes and behaviors.

- Analyze and disseminate evaluation data, and develop or modify training materials and capacity-building activities.

2. Country level: Moderate Behavior Change Communications Package – In countries where feasible, include the preceding activities and add an interpersonal communication component.

   Examples of activities:

   - Collect and examine existing information on community-based activities such as community-based contraceptive distribution networks, community organizations, and key opinion leaders. Identify points of entry into the community and opportunities for community mobilization and interpersonal communication activities.
   - Assess social and structural barriers to effective use of community members in supporting and reinforcing attitude and behavior change (including privacy issues, dispersion of population, age/gender issues, etc.)
   - Form a local advisory committee with relevant members of the community including target group members. Develop plans for coordinating HIV-related health services with the community mobilization effort.
   - Design a community mobilization protocol, tailored to existing community structures and resources, and collect qualitative data as needed.
   - Develop training programs and train community networkers while linking interpersonal communication/mobilization activities to the radio program (e.g., through brochures, newsletters, fliers and other collateral materials linked to the serial drama).
   - Develop an evaluation protocol to assess implementation and impact on target community; develop appropriate monitoring and feedback mechanisms; collect periodic information from community network to use for feedback to writers and broadcasters.
   - Analyze and disseminate evaluation data from the activities, develop training materials and capacity-building activities.

3. Multi-national level --Activities to support technology transfer and strengthen the capacity of government ministries of health and local broadcasters to design, implement and evaluate behavior change communication activities.

   Possible activities:

   - Develop and conduct regional training/capacity-building workshops on the use of long-running serialized dramas for HIV prevention and related goals.
   - Conduct follow-up training/capacity-building activities.
   - Carefully document the process of developing and implementing behavior change communications activities through case studies, lessons-learned documents, training materials, and manuals.

Technical Considerations

Enhancing the capacity of local producers, writers, evaluators, and community-based networks to design, implement and evaluate an effective behavior change communication program is essential to a successful and sustainable program. An in-country project director, as well as a producer, head writer, and research contract support will be needed. CDC must provide resource support for an in-country project team, and will need to work with in-country and regional partners to provide training and technical assistance. Support for comprehensive evaluation of the program is also critical for technology transfer and capacity building.

Operational Considerations

In countries with numerous languages and cultural groups, a behavior change communications program using mass media may be neither appropriate nor cost-effective. Programs and evaluation materials must be in local languages

Minimal requirements for successful communication activities using broadcast mass media include widespread access of target populations, proper equipment and power supply for broadcast, local producers and writers who can be trained to produce the program, and supportive attitudes and openness of key leaders and institutions. CDC may need to work with other donors to improve access to radio and to address the accessibility of messages.

For greatest impact, the communication program should be linked to services and supplies (such as VCT, condoms and contraceptives, STI treatment, and other family planning services). Where the infrastructure is poor and/or supplies are limited, these conditions need should be accurately reflected in the serial drama. Where possible, CDC may support expanding or establishing these services, and this should be coordinated with any behavior change communication programs.

Resources

CDC staff or organizational units:

- NCCDPHP/DRH--Behavioral Research Unit
- NCHSTP/DSTD-Behavioral Intervention Research Branch
- NCHSTP/DHAP/SE--Epidemiology Branch
- NCHSTP/DHAP/IRS--Behavioral Intervention Research Branch
- NCHSTP/DTBE

In-country support:

- USAID

Key Partners

- WHO/African Region
- UNAIDS
- USAID
- UNFPA
- URTNA--Union of Radio and Television Organizations of Africa
- National ministries and local government
- NGOs
- Other private sector (commercial broadcasters)

Monitoring and Evaluation
Monitoring and evaluation activities will vary in each setting, depending on the design of the program, local resources, and availability of data. An evaluation package for a program will include at least some of the following key components and indicators.

Formative Evaluation: To design and develop the program, monitor implementation, and provide feedback on ongoing activities.

Data Collection	Goals
Literature review	1. Epidemiological and community issues needs assessment. 2. Institutional support.
Focus groups	1. Issues needs assessment (attitudes, beliefs, barriers, perceived social norms, identification of key leaders). 2. Define target audience and community network. 3. Design message/community mobilization strategy 4. Pretest, continually assess program.
Interviews	1. Determine institutional support.
Quantitative survey (semi-structured)	1. Needs assessment: issues. 2. Define target audience.
Site visits	1. Characters and set development/recruit community networkers.
Listener groups	1. Continuing program assessment via audience feedback 2. Interview community networkers

Summative (Outcome/Impact) Evaluation: To assess the effectiveness of the program.

Data Collection	Goals
Ratings	1. Measure listenership/audience size.
Field experiment	1. Measure change in attitudes, behaviors, norms that can be attributed to the program. 2. Measure listenership.
Clinic/CBD intake data	1. Measure change in number of clinic/CBD visits. 2. Determine reasons for new/continuing clients. 3. Measure change in service requested.
Letter analysis and a mailed questionnaire to letter writers	1. Measure program appeal. 2. Assess trends in audience response to themes. 3. Provide feedback to scriptwriters, producers, and other stakeholders.

Data Collection	Goals
Qualitative assessment	1. Evaluate radio episodes—which were most and least effective? 2. Evaluate how the entertainment-education strategy intervenes to change behavior.
Script analysis	1. Demonstrate that the entertainment-education strategy was followed. 2. Determine script content, series priorities (duration and timing of onset of each theme). 3. Demonstrate that the entertainment education program affected viewers' behavior. 4. Demonstrate the role (positive, negative or ambivalent) of each character.
Satellite families and community network focus groups	1. Evaluate listener response to the radio series. 2. Provide feedback to the scriptwriters and producer.
Community network survey	1. Identify strategies and methods employed by community networkers to reinforce behavior changes modeled in the radio series. 2. Assess impact on attitudes and behavior of networkers participating in community mobilization activities.
Behavioral surveillance, DHS	1. Obtain independent measures of behavioral variables before and after the radio broadcasts.
Product sales/distribution	1. Measure the effect of the program in increasing supply/distribution/access to products used in the radio series.

2.8 Surveillance

Background
Both epidemiological and behavioral surveillance methods help inform policymakers as to the realities and priorities in relation to the epidemic. Epidemiological surveillance is the major way national and local health authorities can assess the extent and monitor the trends of the HIV epidemic and set or modify priorities for prevention. Behavioral surveillance indicates risks for HIV and helps interpret the HIV levels and changes in those levels.

Faced with multiple competing priorities, many developing countries have not been able to sustain a reliable HIV/AIDS surveillance system and are unable to provide the critical data and analysis needed. These countries lack supplies and qualified staff dedicated to HIV/AIDS surveillance, as well as tools and skills for data analysis and reporting, laboratory infrastructure, and quality assurance.

Recognized Best Practices
The 1989 WHO/GPA "Field Guidelines for HIV Sentinel Surveillance: A manual for National AIDS Control Programmes" is the key reference document guiding best practices. Two more recently elaborated surveillance practices are the 1999 WHO/UNAIDS "Guidelines for Sexually Transmitted Disease Surveillance," and the UNAIDS/WHO "Second Generation Surveillance for HIV" (in press early 2000, not yet field tested).

CDC Experience and Capabilities
For six years, CDC funded and conducted an international HIV/AIDS surveillance course. Together with international research collaborations, CDC has provided assistance in establishing or enhancing HIV surveillance activities and training in Europe, Africa, Latin America, and Asia. Under USAID and other international agencies, CDC has provided short-term technical assistance to numerous ministries of health on surveillance techniques and the laboratory capacity to conduct surveillance. CDC provides a medical epidemiologist to UNAIDS to support international activities in surveillance.

CDC Approach
An important infrastructural element of GAA is to assist the countries in enhancing or developing HIV surveillance systems, as well as using the results. A basic menu of surveillance activities is proposed under GAA for those countries with both the commitment and stable institutional structure sufficient for ongoing surveillance. Specific activities for a country will be negotiated with that country and take into consideration institutional interest and capacity as well as partnerships and activities already in place.

CDC will collaborate with countries to assess and analyze existing data and to assure at least a modest package of surveillance activities to target prevention and care, monitor the epidemic, and assure sufficient laboratory capacity to support that surveillance. To be sustainable and to be used, the surveillance must be carried out by, and have significant buy-in from, the MOH. CDC will collaborate with international partners to provide technical assistance, training, and some resource support.

Focus will be on five countries in the first year, five more in the second year, and five more in the third year.

Illustrative Activities

1. Country level

   Minimal Surveillance Package (in priority order)

   - Enhance laboratory capacity for serologic diagnosis of HIV (primarily ELISA, though with rapid testing used for surveillance in some settings).
   - Strengthen or build HIV sentinel surveillance in antenatal populations in multiple areas of the country, urban and rural. Age (or age group) should be noted in the data collected so that HIV patterns over time can be monitored in young women.
   - Examine AIDS case reporting and, if practiced, HIV infection reporting; help analyze in terms of geographic, demographic, and risk patterns. Some advice may be offered, but little or no enhancement of the existing system is proposed.
   - Establish or strengthen HIV sentinel surveillance (or at least one-time surveys) in TB patients, to clarify the priority of TB assessment, treatment, and preventive therapy in HIV-infected persons. This should be feasible in those countries with functioning TB services.
   - Support HIV sentinel surveys (or at least one-time surveys) in STI patients, to clarify the role of STIs in HIV transmission locally and to focus attention on the priority of STI prevention and treatment on HIV prevention. This should be feasible in countries with functioning STI treatment services, or once STI services are supported under GAA.
   - Collate and examine data from HIV and syphilis testing of blood donations.
   - Support surveys to determine HIV prevalence among patients receiving selected hospital services. This is easy to do, provides a strong indication of HIV impact on clinical services and can also be a substitute in the absence of accessible TB services.
   - Strengthen STI surveillance (feasibility depends on functioning STI clinics) with a focus on sentinel posts reporting the following:
     - Urethral discharge in males.
     - Non-vesicular genital ulcers in males and females.
     - Periodic testing of antimicrobial sensitivity/resistance of *Neisseria gonorrhoeae*.
     - Syphilis serologic surveys in antenatal/delivery settings (must include treatment of positives).
     - Syphilis serologic surveys and surveys where feasible of genital chlamydial and gonococcal infection among persons at high risk (e.g., female sex workers).
   - Support surveillance for TB drug resistance to assist in monitoring and evaluating TB treatment and preventive therapy. In some countries, specimens could be collected on appropriate culture medium and shipped to an international reference laboratory for drug resistance testing.
   - Support special HIV sero-surveys (depending on local needs and conditions) in high-risk populations, such as CSW, truck drivers, injection drug users (IDUs), refugees, internally

displaced persons, and migrant workers. In some settings, STI markers can be evaluated in addition to HIV.

- Provide limited support for behavioral research. Behavioral surveillance would be a priority only after some of the HIV and STI surveillance activities listed above are functioning satisfactorily. Before that time, occasional, focused one-time behavioral studies may be considered to address specific, important questions.
- CDC does not propose to support reporting of TB cases under this initiative, however HIV sero-surveillance in TB patients is proposed (see above). In addition, when TB screening is conducted as part of the care of HIV-infected persons, prevalence of TB infection and clinical TB in such persons will be monitored.
- Provide support and assistance for incidence studies (e.g., detuned assay application once it has been validated for non-B HIV subtypes). This will depend on the availability of effective technology. CDC does not propose to support cohort studies under the GAA initiative.

2. Multi-national level--Several surveillance activities that transcend individual countries may be appropriate and supported by CDC on a case-by-case basis.
   - Evaluation of new and promising diagnostic reagents at selected reference centers and in field settings.
   - Evaluate and adapt the "detuned" assay (to permit estimating incidence from cross-section surveys) for the HIV-1 subtypes most common in Africa: A, D, and C.
   - Survey important transnational populations in Africa that are rarely subject to HIV surveillance or prevention, even if beyond the boundaries of specific GAA-participating countries. These include migrant workers, refugees, and international peacekeepers.

Technical Considerations
To be sustainable, surveillance must have MOH buy-in, commitment, and dedicated personnel; the system must also be as straightforward and uncomplicated as possible.

Except in a few countries having existing behavioral research institutions, behavioral surveillance may not currently be feasible with the resources available through the CDC GAA Initiative or in the ministries of health.

Behavioral surveillance based on repeated surveys in sentinel populations has rarely been successful in Africa or elsewhere. However, once the behavioral component of "Second Generation Surveillance" is successfully pilot-tested, it may be possible in some countries with GAA activities to add this to the surveillance package.

Operational Considerations
Elements any country must have in which CDC would be able meaningfully to assist in developing or appreciably enhancing surveillance:

- A preliminary assessment, done collaboratively with the NACP and with other partners operationally involved in surveillance in the country, to determine what surveillance activities currently exist and what must be added or enhanced.
- Involve the CDC NCHSTP Assistant Director for Science in discussions of proposed surveillance (and evaluation) activities to obtain guidance on formal ethical committee review applicability and processes for the proposed activities.

Ethical committee review and approval must be obtained for any elements considered to be human subject research, such as special studies with behavioral questionnaires, and collecting specimens which are not part of routine clinical work at the site where the activity occurs. Although any surveillance or evaluation work must always be ethical, fairly complicated procedural requirements apply when something is judged to be "research" on human subjects. This includes obtaining project assurances from the U.S.-based Office of Protection from Research Risk for the ethical review committees in each of the institutions or facilities where the work is done; detailed protocols for each activity must be approved by review boards of CDC and the participating country and institution, as well annual renewals and annual reports submitted to those boards.

Resources

The following critical elements of support are needed within the country to ensure a high quality sustainable program:

- A CDC resident technical assignee able to work continuously with the institutions and facilities (and other external partners) involved in surveillance activities and acquire equipment and supplies as well as organize visits by technical consultants.
- A sufficient number of technical resource people (epidemiologists, laboratory specialists and information managers) available at CDC and elsewhere to provide the on-site technical consultations and follow-up needed as surveillance is established, expanded, analyzed, and used in the countries.
- At least one full-time national epidemiologist, based in the MOH, to manage and be responsible for surveillance. The work involves supervising assistants, conducting working visits to sentinel sites, as well as data management, analysis, and reporting.
- Staff at the sentinel sites with sufficient time and training to carry out the surveillance functions.
- Laboratory capacity in country to test specimens from sero-surveillance for HIV and STI.
- Transportation, mechanism for travel expenses and related expenses to visit sites, conduct training, handle specimens, etc.
- Computers and access to data management, programming, and analysis staff.

Key partners

National

MOH
National AIDS Control Program (NACP)
National and regional reference laboratories

Behavioral research institutes (if behavioral studies or surveillance are attempted)

International
UNAIDS/WHO Working Group on global HIV/AIDS/TI surveillance
UNAIDS
WHO
WHO-AFRO
European Community surveillance initiative
NGOs, such as FHI, experienced in behavioral work (if behavioral surveillance is attempted).

Monitoring and evaluation

The major realistic indicators for monitoring and evaluating surveillance are performance and process measures such as:

Number and types of sentinel sites conducting surveillance
Whether target sample sizes are met
Whether training and periodic retraining of staff has occurred
Timeliness of surveillance activities
Whether data are analyzed and reported in a reasonable and timely manner
Whether policy makers and program managers are aware of surveillance findings and consider them in relation to their prevention and care activities.

In addition, performance standards for the laboratory and information systems components of surveillance are covered in sections 3.1 Laboratory Technical Support and 3.2 Information Systems.

Implications for Other Strategies

Other technical strategies can be important components of a comprehensive surveillance program. For example, when VCT is part of a preventive intervention, the data may be useful for surveillance purposes, especially that from mother-to-child prevention activities. Additionally, when serologic testing and treatment for syphilis are done routinely to prevent congenital syphilis, or when persons at high risk such as female sex workers are routinely screened and treated for STIs, the resulting data may be useful in surveillance.

Other technical strategies also address relate to surveillance: Laboratory Support, Training, Information Management; Voluntary Counseling and Testing, STI Management, and Monitoring and Evaluation.

3. Capacity and Infrastructure Technical Strategies

3.1 Laboratory Support

Background
With the overall decline in resource allocation to health care, many of the laboratories in the GAA target countries find it difficult to support existing laboratory needs for diagnosis, monitoring and surveillance of HIV, TB, and STIs. Even in established laboratories, procuring and evaluating suitable reagents, quality control (QC) and quality assurance (QA) remain issues. The continued loss of skilled staff is a serious problem. In many cases the personnel turnover mandates constant re-training of qualified staff and rebuilding the experience base needed to support public health needs. Without additional resources, expanding the current workload of existing laboratories to support the additional requirements for GAA activities will be extremely difficult.

To ensure quality laboratory support, any assistance program must address a spectrum of local and regional epidemics. TB is the leading opportunistic infection of persons with AIDS in these countries. Management of HIV-related disease must therefore also include minimal essential laboratory support for tuberculosis management and prevention as well. In addition, the strong epidemiological association between HIV/AIDS and other STIs suggests at least a two- to five-fold increased risk for HIV infection among persons with STIs. Early detection and treatment of STIs along with routine public health surveillance are vital components of a comprehensive HIV control and prevention program.

Recognized Best Practices
Programs for individual countries should be tailored to their respective needs and meet minimum laboratory standards based on internationally accepted best practices (as cited by expert organizations such as CDC, WHO, UNAIDS and the International Union Against TB and Lung Disease or IUATLD). Support for HIV surveillance and prevention should focus on national reference laboratories to establish standardized protocols, provide QA/QC, and continuing diagnostic training. Diagnostic activities should be decentralized to provide point of service support and include alternative testing strategies based on simple and rapid tests.

Impressive results accrue from adhering to minimum standards for TB laboratory testing. The recommended minimum sustainable standards are smear microscopy at all peripheral levels with selected culture and minimal population-based drug resistance testing at National Reference Laboratories.

For STIs, the focus will be on building laboratory capacity to evaluate syndromic management. Where resources are limited, minimum laboratory standards require a combination of clinical exam, rapid tests and basic serology (RPR, FTA-ABS, TPHA) or other microbiological techniques such as Gram-stain. Where appropriate, alternative rapid testing methods should be considered. Q ON ACRONYMS SENT TO WORKING GROUP 7/31.

Once the basic testing (HIV diagnostics, TB and GC smear microscopy) is assured, other testing capacity will be considered on a case-by-case basis.

CDC Experience and Capabilities

CDC has extensive experience in providing technical assistance in developing countries in strengthening laboratory capacity, training, selecting testing algorithms and test kits, and other functions related to HIV, TB and STI laboratory work. For specific capabilities, see below:

HIV

- Serves as WHO Reference Laboratory for HIV-1 and HIV-2
- Collaborates on field evaluation of rapid testing with USAID, UNICEF, and PAHO; and transfers technology to countries in Africa, the Caribbean, and Latin America.
- Carries out performance evaluation programs with more than 80 countries participating in HIV antibody, P24, RNA, TLI, or TB drug susceptibility testing.
- Provides long-term technical laboratory support for HIV work to countries in Africa, Asia and Latin America
- Consults in bilateral technical roles with a focus on HIV/TB in many developing countries in Africa, Asia and Latin America.
- Established fully functional HIV laboratories in the Ivory Coast, Uganda, and Thailand.

Tuberculosis

- Serves as WHO Supra-National Reference laboratories for TB (SRL) Network.
- Participates in the WHO/IUATLD Global Project on Drug Resistance Surveillance.
- Established and supports TB Field Station in Botswana with the Government of Botswana.
- Assisted in establishing TB laboratory capacity in Vietnam, Russia and other former Soviet Republics.
- Assisted in developing and implementing national models for external QC for AFB microscopy in Mexico and Vietnam.
- Collaborated with APHL, WHO, IUATLD, PAHO, and INDRE (Mexico) to develop an international training video on AFB microscopy
- With APHL, convened a workgroup with WHO, IUATLD, KNCV (Netherlands) to develop international guidelines on external QC systems for AFB microscopy.

STIs

- Serves as WHO Syphilis Serology Reference Center.
- Monitors the U.S. National Gonococcal Isolates Surveillance Project.
- Serves on the STI advisory board of the Africa Center for Reproductive Health and Population Studies, based in South Africa.
- Shares expertise in laboratory diagnosis, and anti-microbial susceptibility testing of sexually transmitted pathogens in developing countries.
- Shares CDC's considerable experience in molecular epidemiology of syphilis, gonorrhea and chancroid.

- Assisted in implementing an HIV/STI prevention intervention among female commercial sex workers in Bolivia, a program currently being modified and introduced in Russia and Indonesia.
- Performed syphilis and bacterial vaginosis surveillance in the Central African Republic and Indonesia.

CDC Approach

The laboratory technical support program will provide and coordinate laboratory assessment, technology transfer, training and support to countries participating in the GAA initiative. The support would be in the form of establishing or improving laboratory capabilities for surveillance, prevention, and care activities envisioned by the GAA program. Quality HIV testing will be the focus of the laboratory strategy. While strengthening National Reference Laboratories, the approach emphasizes the capacity to provide point-of-service diagnostic support for surveillance, voluntary counseling and testing, and prevention of mother-to-child transmission. Our primary obligation is to ensure minimum structures and testing capability to perform all the goals of the GAA. Of necessity this will include establishing best practices for monitoring and diagnosis of TB, STIs and other opportunistic infections (OIs).

Because of the anticipated diversity in laboratory capacity, infrastructure and experience, a uniform prescription for all the GAA target countries is not possible. This initiative should, however, be guided by the need for the laboratories or country programs to maintain at least the minimum standards. Our systematic approach will necessitate consultation with the host country and partners on programmatic needs.

Country-based laboratory assessment must determine the following:

- Current partners, local and international.
- Level of support from MOH and other partners.
- Laboratory organization at national, regional and local level.
- Laboratory capacity – infrastructure, staffing and materiel.
- Logistics of sample movement and patient referrals.
- Current reagents and test kits.
- Current laboratory activities and testing strategies.
- Level of communication within labs and between labs and programs.

Where minimum standards have been met or surpassed, limited assistance may be offered to complement existing activities, including technical consulting, support for decentralizing GAA activities, QA and QC training, and equipment, reagents and supplies as needed for GAA.

Where minimum standards have not been met, the GAA can work with host countries and their partners to identify obstacles and to develop programs that will adequately address such obstacles. Because this public health initiative focuses on prevention, more complex laboratory technologies will not be included except in limited areas where such tasks are needed in relation to GAA activities and where sufficient value-added benefit is likely to be realized.

Illustrative Activities
Emphasize establishing or strengthening capacity at central, regional, and peripheral levels.

1. Technical capacity building

- Provide training and implement QA programs at national and regional levels.
- Institute internal and external QC standards at national and regional labs.
- Develop and evaluate alternative rapid testing procedures.
- Standardize testing protocols for diagnosis and surveillance.
- Plan and conduct international and in-country or regional training workshops.
- Train in-country personnel to provide benchmark training for EIAs and rapid tests for HIV.
- Develop and distribute appropriate laboratory training products such as videos, booklets.
- Include in laboratory training curriculum: i.e., University/Public Health/Lab technician/nursing.
- Facilitate partnerships between GAA countries and U.S. state public health laboratories to focus on long-term relationships, with phased development of laboratory capacity.
- Provide training for laboratory diagnosis and monitoring of TB using acid-fast microscopy.
- Provide training for laboratory diagnosis of STIs.

2. Physical infrastructure development

- Where there is a commitment and willingness by the host nations and other partners to develop capacity, the GAA should assist in physical infrastructure development to provide a safe and efficient work environment.
- Procure minimal equipment such as microscopes.
- Procure bulk reagents and supplies.

Technical considerations

- QA/QC - For reports to be consistently reliable and reproducible, focus attention on quality assurance and quality control at all levels.
- Training - Proper staff training uses sustainable and appropriate technology, preferably in host country, and periodic refresher courses.
- Recruitment and retention - Efforts should be made not only to recruit and train capable local staff, but to also retain such staff at the level of their training.
- Proficiency –monitor staff proficiency periodically using internal and external standards.
- Testing algorithm – should be based on Best Practice model. This would vary depending on desired test and test site.

- Reagents – Use only appropriate reagents with acceptable sensitivity and specificity that have been validated for use in a target country.
- Equipment- Maintain in proper working condition equipment such as incubators, EIA washers and readers, and microscopes.
- Biosafety – Provide a safe and efficient work environment for lab staff and patients. Obtain and distribute biohazard handling equipment. Offer technical support from the CDC Office of Biosafety.
- Physical facilities- Identify and bridge gaps between current physical facilities and what is needed to support the GAA activities. This should include, but not be limited to, electrical reliability, space and plumbing.
- Establish ongoing monitoring programs.

Operational considerations

- Address shipping logistics and reagent storage early on and require the GAA Country Support Cluster to be involved in the initial country assessment.
- For laboratory support purposes, group the target countries based on geographic location or degree of intended GAA involvement. Each group should have CDC oversight either in the form of a team of "consultants@ with a designated team leader or an individual with previous experience working in the targeted countries.
- Work to integrate GAA country-level activities into the host country=s national programs.
- For all GAA activities, consult with the local Ministry of Health, USAID, and other interested parties, both local and international.
- Use appropriate and sustainable equipment.
- In-country GAA technical assignee coordinates technical assistance in laboratory capacity enhancement and training.

Resources

The overall lead for the laboratory support will come from the Division of AIDS, STI, and TB Laboratory Research (DASTLR), NCID, CDC. The CDC Public Health Planning Office (PHPPO) will be a partner in this effort and will collaborate with APHL, with whom it has a cooperative agreement to conduct international laboratory assessments.

Consult and enlist in-country national and regional reference laboratories, institutions such as universities, other NGOs, and private citizens who have expertise or experience in specific GAA target countries to support this endeavor.

Key partners

National governments
USAID
WHO

UNICEF
UNAIDS.
Other governmental and non-governmental organizations such as
MSF
GTZ
EU
KNCV
IUATLD
APHL, through its association with PHPPO, for training and assessment.

Monitoring and Evaluation

Determine the laboratory efficiency and reliability, staff proficiency and the laboratories' ability to support the various programs that GAA intends to implement. Used in combination with data from other sources, results from the laboratories should aid in refining national Public Health policy in GAA target countries. Monitoring and evaluation should focus on:

- QA/QC evaluation of the central/regional laboratories running ELISA assays for HIV testing. Could be done as part of the MPEP evaluation program in PHPPO/DLS.
- QA/QC of rapid testing by collecting blood spots at the time of testing to be analyzed at a central/regional laboratory. A portion of these could then be tested by CDC.
- College of American Pathologists (CAP) laboratory evaluation standards adapted for TB and STIs testing.
- Incidence assessment to monitor interventions.
- Biological marker monitoring.
- Periodic site visits to assess on-going capabilities.

3.2 Information Systems

Background
Information systems will play a key role in virtually all of the programs supported by the CDC Global AIDS Activity. Decisions on priority areas, allocating resources and monitoring the progress of GAA program activities will depend on access to accurate and current information. Flexible computer-based data systems will be needed to provide this information in a timely, coordinated, and readily available manner.

Many of the CDC GAA work areas (surveillance, voluntary counseling and testing, patient care) will develop model data collection questionnaires, interview forms and reports. Sample or prototype information systems must also be developed that support the collection, entry, validation, management and analysis of those data. These systems will allow the magnitude and locality of the HIV/AIDS problem to be determined, will assist in managing individuals seeking services of various GAA supported counseling centers and treatment clinics, and will allow for evaluating program effectiveness– both in terms of process (e.g., number of persons seen, number of medical evaluations performed, number of persons treated) and in terms of long-term impact (e.g., Is the burden of HIV infection and disease decreasing and is the quality of life for persons living in GAA-support countries improving?)

Recognized Best Practices
For many years, the CDC and the World Health Organization (WHO) have developed prototypical information systems to accompany their guidelines and recommendations for surveillance systems development[1]. CDC should follow this example.

To simplify system implementation and to provide systems at a reasonable cost, GAA recommends that EpiInfo 2000 be used for developing all of the non-laboratory model systems. EpiInfo 2000 is available at no cost and its predecessor, EpiInfo version 6 for DOS, is already being used for public health activities throughout Africa and around the world.

The two choices for laboratory systems are EpiInfo 2000 and LITS+. EpiInfo 2000 is reasonable and appropriate for smaller labs primarily doing HIV testing, but for more sophisticated and/or high-volume laboratories, the CDC-developed Laboratory Information Tracking Systems (LITS+) may be appropriate. LITS+, like EpiInfo 2000, is easily customized, but LITS+ also provides specific additional functionality suitable to laboratory data management.

These choices are also consistent with decisions for surveillance and laboratory systems by the African Regional Office of the World Health Organization (WHO/AFRO).

CDC Experience and Capabilities
Below are listed key activities and individual references for GAA information systems activities:

- EpiInfo 2000 development and support (http://www.cdc.gov/epo/pub_sw.htm) – Andrew G. Dean (agd1@cdc.gov), Division of Public Health Surveillance and Informatics (DPHSI), Epidemiology Program Office (EPO).

[1] For example, see http://www.who.int/emc-documents/surveillance/whoemcdis971c.html

- Laboratory Information Tracking System, Plus (LITS+) development and support – Nancy Bean (nth1@cdc.gov), Division of Bacterial and Mycotic Diseases (DBMD), NCID.
- TB surveillance and program management in an international setting (Botswana) – Tom Kenyon (tak8@cdc.gov), International Activity, Division of Tuberculosis Elimination (DTBE), NCHSTP

CDC Approach

The CDC approach to information systems consists of five basic but very interrelated activities.

- Train local staff to develop, support and enhance their information systems and associated infrastructure.
- Develop sample information systems to support the activities of various GAA work groups.
- Assist countries in identifying and training staff to use information systems.
- Assist countries to procure hardware and software for running these systems.
- Consult with countries on adapting the model systems to meet their own information and data management needs.

Software Systems

CDC will provide software for prototypical or model information systems to support the various GAA programs. Individual countries will then adapt this software to meet their particular needs. Information systems will be developed for surveillance, counseling center and clinic management, and laboratory information management.

For surveillance and counseling center/clinic management, individual GAA work groups are currently developing model programs and activities. These programs will include standardized data collection forms and reports to be implemented in EpiInfo 2000. EpiInfo will allow the model systems to be modified by each country. These systems will illustrate appropriate methods for data management, evaluation and quality assurance, including the need to provide documentation, instruction manuals, and training in completing and processing forms; the use of "check digits" in identification numbers; and finally methods for validating data quality by sampling for accuracy in coding and data entry. These systems must also include two-way information flow, both from the data collection site to the central location and from the central location back to the reporting site.

Large, high-volume laboratories have special data management needs. These include collecting data on individuals from various specialized labs (HIV, STI, bacteriology, anti-TB drug resistance, etc.), reporting results back to physicians, and – in the case of large reference or research labs – handling specimen storage and retrieval. For these reasons, the LITS+ system will be used, developed by the Division of Bacterial and Mycotic Diseases, NCID/CDC.

Additional efforts will be undertaken to ensure that the systems developed by GAA and AFRO not only share the same development tools, but also standardize data elements and methods for electronic reporting from remote sites to in-country health districts, to central Ministries of Health and finally to the international GAA and WHO/AFRO offices. Standardized record formats will be developed in collaboration with WHO/AFRO for reporting at the international level.

Hardware

In addition to standardizing software, both computer hardware and data communications methods will be standardized. When there is sufficient need at the country health district level, low-end Windows/Intel compatible personal computers will be installed for data entry, management and report generation. Based on current technology, these systems will meet the following minimal specifications:

- 450 megahertz Pentium-III computers.
- 10-gigabytes disk space.
- Graphics card, displaying 1024x780 pixels.
- High-resolution monitors, dot pitch of .28mm or finer.
- Printer (black-and-white laser or color ink-jet).
- 3.5-inch, 1.44 megabyte diskette drive.
- LS-120 megabyte high-capacity diskette drive (which may also support 1.44 megabyte diskettes).
- Appropriate stand-alone uninterruptible power supply which can communicate a power failure to the system and then maintain full system functionality for at least 10 minutes.
- 56-kilobit per second external modem with telephone line lightning/surge protector for sites that will report electronically (requires access to reliable telephone lines).
- Microsoft Windows '98, Microsoft Office '97, EpiInfo 2000, and anti-virus software (anti-virus software distributed with Windows '98 is acceptable), tape back-up software.

At the national government level, more powerful computers and other equipment may be needed depending on the volume of data being gathered and other needs, such as high-quality color printing for reports, or high-speed Internet access for distance learning. Large offices may also want to install local-area networks (LANs) to simplify file sharing and satellite or other connections to the Internet for distance-based training and communications.

To simplify service, computers should use generic, off-the-shelf component parts. Some vendors use proprietary interfaces and equipment making servicing and finding replacement parts more difficult. At a minimum, each country program should have a maintenance contract to cover all hardware provided through GAA.

Illustrative Activities

Initially, information systems will be developed to support the data collection, management, reporting and analysis for:

- Surveillance--HIV seroprevalence studies, AIDS case reporting, behavioral, STI, TB in HIV infected persons
- Counseling center/clinic management--voluntary counseling and testing, care of HIV-infected patients, STI prevention and care, TB prevention and care
- Laboratory Information Management Systems

These systems will be included as part of the overall GAA package provided for their consideration to Ministries of Health. These systems (together with the surveys that they support) can be modified to meet the specific needs and situation of each participating country. Reporting to GAA and WHO/AFRO will, however, be standardized.

Additional model systems may be developed to support surveys of special populations, blood safety, public/private partnerships and other targeted needs.

Technical Considerations
Not every location within every country will require computers to support their data collection activities. Pencil and paper systems will be appropriate for smaller, more remote locations. Summaries of data collected from those sites could be sent to in-country district offices weekly, monthly, or quarterly, depending on the need for timely and current data. Remote or provincial sites that have computers could communicate data to the main county site by diskette for consolidation and reporting.

Remote locations will be encouraged to begin to transmit data electronically where feasible. These sites must be easily reached and supported by staff trained to use these systems. They must also have the physical infrastructure necessary to support these systems such as reliable power and telephone communications for electronic data transmission. Ministries of Health and in-country CDC technical staff should also have reliable Internet connections available. GAA must fund these connections through local ISPs or through satellite dish communications, provided the necessary in-country clearances can be obtained.

For information systems to be helpful, the data they collect must be used. Therefore, Ministries of Health implementing such systems must be committed to using these data to inform appropriate decisions on priority areas, to allocate resources, and to monitor and evaluate virtually all GAA program activities. It follows that Ministries of Health must provide trained personnel to examine the data regularly. This will ensure not only in-country input and ownership necessary to assure that software systems are both appropriate and adopted, but will help guarantee that any errors or problems in the systems or data are detected and repaired quickly.

Operational Considerations
At a minimum, each country must have an individual with overall responsibility for data management and information systems activities. This person could either be an in-country national or an international consultant. These individuals must have a working knowledge of EpiInfo 2000 and LITS+, or be willing to be trained to use those systems. Depending on the magnitude of the GAA-supported effort, additional programming and hardware support staff might be needed.

Resources
Staff knowledgeable about information systems (and EpiInfo 2000 and LITS+ in particular) must be located in every country and CDC will hire staff experts centrally in informatics, software analysis/programming, hardware support/management and communications who can develop, consult, and train in-country staff on the use of the systems and the data they collect.

Many other individuals currently located at CDC in Atlanta are willing to assist in GAA activities. Below is a list of contacts with area of expertise, name, email address and CDC division.

1. Geographic Information Systems and GPS-based mapping in developing countries – Allen Hightower (awh1@cdc.gov), Data Management Activity, Division of Parasitic Diseases (DPD), National Center for Infectious Diseases (NCID).
2. Information systems development in international settings – Kelly Bussell (keb1@cdc.gov), International Activities Branch (IAB), Division of HIV/AIDS Prevention-Surveillance and Epidemiology (DHAP-SE), National Center for HIV/AIDS, STI, and TB Prevention (NCHSTP).
3. Information systems integration – Meade Morgan (wmm1@cdc.gov), DHAP-SE, NCHSTP.
4. Operational, growth, and logistical issues in a high-volume surveillance facility – Patrick Whitaker (jpw1@cdc.gov).
5. Surveillance information systems development – Robert Fagan (raf2@cdc.gov), Systems Operation and Information Branch (SOIB), DPHSI, EPO.
6. World Wide Web/Internet-based data warehousing and analysis systems – Ray Ransom (rlr1@cdc.gov), Statistics and Data Management Branch (SDMB), Division of Sexually Transmitted Disease Prevention (DSTDP), NCHSTP.
7. Hardware systems and support (including Internet connectivity) – Calvin Johnson (mcj2@cdc.gov), Office of the Director (OD), DHAP-SE, NCHSTP, and Jaspal Sagoo (jzs2@cdc.gov), Prevention Information Office, Office of the Director, NCHSTP.
8. Office Automation – David Foster (daf0@cdc.gov), OD, DHAP-SE, NCHSTP.

Additional resources for GAA to draw upon include staff working on surveillance and information systems for key partner organizations such as USAID, WHO/AFRO or the CDC HIV/AIDS projects supported by IAB, DHAP-SE, NCHSTP.

Key partners

EpiInfo 2000 development team/CDC
LITS+ development team/CDC
USAID
WHO/AFRO

3.3 Monitoring and Evaluation

Background

Monitoring and Evaluation (M&E) is part of good program management on all levels--local, national and global--and is expected in all GAA programs. Good process M&E (inputs/process/outputs) is derived from program-based data (See Figure 1). Good outcome and impact M&E in developing countries increasingly relies on the use of district or national-level monitoring indicators derived from population-based surveys, behavioral and disease surveillance, and aggregated program data. Community and socio-political contextual data are also important and best assessed through specifically designed surveys, supplemented by good qualitative data. Such data are critical in clarifying program barriers and successes, suggesting new program directions, and informing resource allocation decisions.

M&E activities provide host country health authorities and their global partners with an assessment of the extent to which prevention and care programs are being implemented and achieving intended objectives. Process evaluations assess the scope, quality and coverage, as well as program inputs and outputs. Outcome evaluations assess program effectiveness. Impact evaluations determine the long-term and sustained effects of the program.

National AIDS Control Programs (NACPs) throughout Africa and India use Medium-Term Plans to outline their national operational plan and program implementation strategy once every three to five years. These plans should include a monitoring and evaluation strategy, but in most cases, carrying out M&E strategies has been plagued by a lack of funds and of technical capacity.

Practical, well-coordinated, and strategic M&E activities will be essential to minimize the burden of data collection on country partners while maximizing usefulness for decision-making. Only where the Ministry of Health is committed to identifying ongoing resources for M&E is it likely to be sustainable.

Recognized Best Practice

- Coordinate and utilize ongoing data collection and analysis in preference to designing new instruments.
- M&E activities are proportional to the resources for the program (10 percent rule) as well as capacity within the program and the country.
- M&E is undertaken at all levels (from program input/output to sexual behavior, disease surveillance and impact mitigation) to provide information needed to document the impact of national and local programs.
- Indicators and instruments for data collection and analysis are ones that build upon international experience and recent developments and can be adapted locally.
- M&E indicators measure population-based biological, behavioral, and social effects of consolidated programs, supplemented with good qualitative data.

The best international document on HIV M&E is the new UNAIDS/WHO/USAID MEASURE ***National AIDS Programs: A Guide to Monitoring and Evaluation*** (Draft: January 19, 2000) (developed and field-tested through a joint effort of UNAIDS, USAID, WHO, MEASURE Evaluation Project, CDC, and National AIDS Program Directors).

CDC Experience and Capabilities
CDC staff provide technical assistance on a variety of M&E related topics: questionnaire development, the design and conduct of sexual and drug-use behavioral surveys and surveillance systems, behavioral interventions and intervention outcome studies, qualitative research methods, economic evaluation including cost-effectiveness studies, and HIV program planning and policy evaluation including use of epidemiological and behavioral data in public health decision-making. Several organizations (e.g., Macro, Inc. and Emory University) partner with CDC to provide technical training and expertise in evaluation-related areas. Distance-based learning is an integral part of CDC's training program and will be useful for M&E capacity building for GAA in Africa and India.

CDC Approach
The CDC approach is to collaborate with the Ministry of Health National AIDS Control Programs (NACPs) and international partners to 1) assess and analyze existing data that could be used for M&E, 2) review existing literature and documentation of what interventions have already been or are being evaluated, 3) assist in the design of national M&E strategies, and 4) work closely with the NACPs to conduct case study evaluations of program outcomes and impact. Activities will be planned and conducted with an emphasis on increasing local M&E capacity and linking M&E results to programs.

The M&E strategy has three tiers:

- Global level-- CDC will work with USAID to decide on indicators to collect for each country program and how to report this information. A minimal level of M&E activities, i.e., process evaluation, will be expected for all GAA programs.
- Country level---Technical assistance to National AIDS Control Programs on use of national-level monitoring indicators.
- Project level---Evaluation. Case studies to evaluate specific GAA programs and projects in selected countries.

M&E is an interdisciplinary theme across all program areas, and each CDC programmatic effort will have a specific M&E plan. Program/project M&E plans will be integrated into CDC's overall M&E strategy to ensure a coordinated effort once programs begin.

The success of the GAA Initiative will depend mainly on the scope (nature/content), quality (capacity), and scale (coverage) of the GAA activities as they are consolidated within existing programs. M&E activities will be designed to answer the following broad questions:

1. What is being done? ***Scope***
2. How well is it being implemented? ***Quality***
3. Are we doing it on a large enough scale? ***Scale/coverage***
4. Is it working? Are we making a difference? ***Success***

This is depicted in the LIFE Conceptual Monitoring and Evaluation Framework diagramed in Figure 1.

The basic CDC approach:
1. Review the situation, nature of need, existing literature and documentation (Stage 1).

2. Assess what is being done (scope) and if it is being done on a large enough scale to make a difference (coverage) (Stage 1).
3. Establish a plan for monitoring program-based input/output data (Stage 1).
4. Select program indicators, establish baselines, and monitor impact (Stage 2).
5. Conduct quality assurance assessments and case study evaluations to determine program success in select topic areas and geographic areas, supplementing the monitoring indicator data collected above (Stage 3).
6. Carry out enhanced outcome evaluations only when resources allow, when addressing priority prevention or care questions, and where opportunities make it feasible.

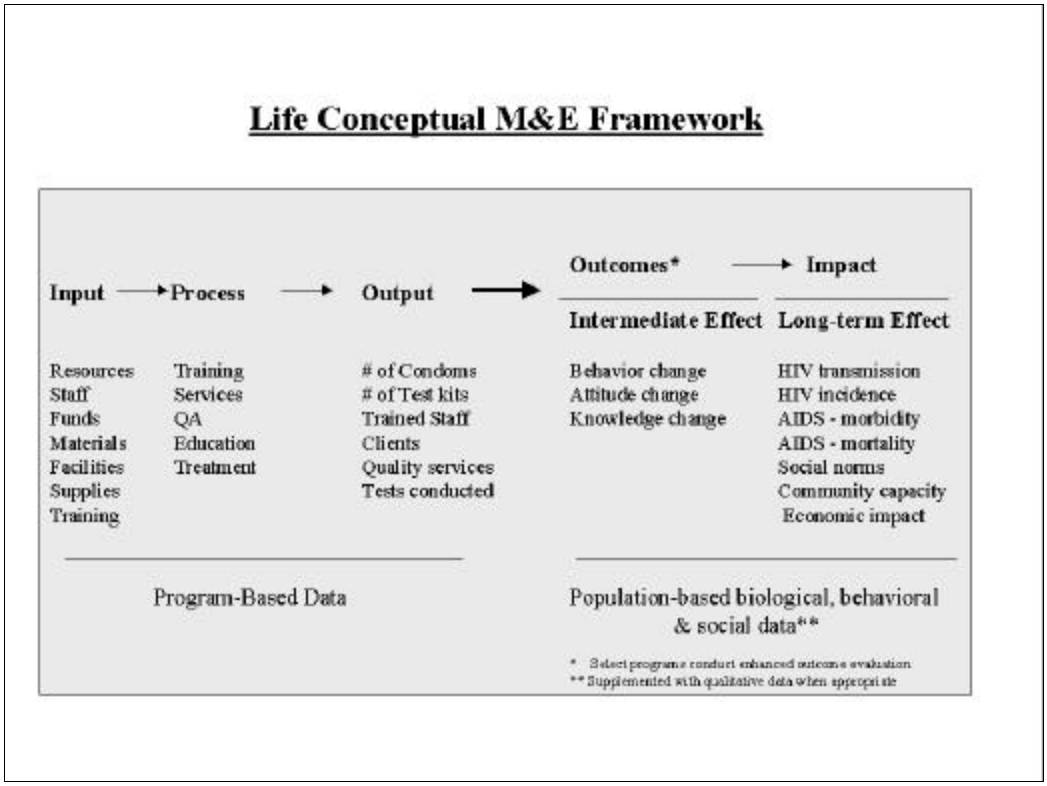

Figure 1.

The decision regarding which level of M&E to engage in will be negotiated with host country and other agency partners.

Illustrative Activities
M&E activities will be conducted in phases or stages as activities are ready for evaluation. Stage 1 and 2 will be conducted in most if not all LIFE partner countries. Stage 3 will be undertaken in selected areas based on the criteria above.

1. Country-level M&E: Stage 1 Activities

- Assist with basic program reviews of existing data, literature, and program documents.

Determine scope and coverage. Collect program-based process data.

- Assist in increasing the capacity to apply M&E data in designing or enhancing prevention or care programs. Conduct training where needed. Provide models that demonstrate how to use data in program/policy design.
- Encourage and facilitate involving personnel, community members, and other stakeholders in planning for, collecting and using M&E data, providing examples that illustrate how to do this effectively at the local and national levels.

CDC will assist in developing process indicators for all GAA-supported programs.

2. Country-level M&E: Stage 2 Activities

- Collaborate with USAID and UNAIDS as they help countries to develop national M&E plans. CDC will provide technical assistance only if needed, since this is a minor role for CDC and a major role for UNAIDS and USAID.
- CDC will assist in developing a plan for national indicators to be used to monitor and evaluate CDC GAA-supported activities, to include strategic planning. Where possible we will rely on data already being collected by USAID and others.

3. Country-level M&E: Stage 3 Activities

- Assist in case study evaluations by program area to describe model programs and practices**.** Case studies of CDC programs would include collecting both qualitative and quantitative data designed to evaluate the progress and success of specific programs. Such evaluations would be supplemented with more rigorous enhanced outcome evaluations when 1) an important issue arises that requires a more rigorous assessment, 2) the existing situation offers a feasible opportunity for an enhanced outcome evaluation and 3) resources are available, both fiscal and human.

Selected examples of M&E methodologies for CDC GAA program areas:

- **STI prevention and care.** Reduce the prevalence and incidence of STIs through improved STI treatment and prevention. Because STI programs in Africa typically focus on strengthening STI treatment practices in health facilities using the syndromic approach, a facility survey would be the best way to assess quality of services. Such a survey should be repeated regularly and should include both interviews and direct observation. Data from other surveys can be used to inform these surveys. General population data on health services utilization is available from the DHS 2001 (Demographic & Health Survey) in participating countries. For specific groups such as mobile populations, military, and commercial sex workers, a special survey would need to be conducted. The National STI Control Programs, typically in collaboration with NACPs, are responsible for monitoring the quality of STI services and would be involved in conducting special surveys.
- **Voluntary counseling and testing (VCT).** Increase the availability and use of VCT services. In many places in Africa, with the notable exception of Uganda, VCT is a relatively new service, surrounded by stigma and many other barriers. Typical M&E strategies involve 1) monitoring program outputs (e.g., number tested, number positive, number of VCT centers, number of VCT centers with minimum quality of services) by means of observation, record reviews and facility surveys; and 2) evaluating selected outcome measures (e.g., knowledge,

attitudes, risk behaviors, health-care seeking behaviors) through periodic, specially designed surveys of VCT participants, community surveys and focus groups of non-participants.

- **Youth prevention strategies.** Reduce the transmission of HIV among youth (ages 15-24). Most evaluations to date have involved school-based interventions and innovative strategies such as drama in educational settings, as well as basic evaluation designs involving pre/post-test interviews with selected youth, plus collecting qualitative data from focus groups and key informants. Community surveys and interviews that reach out to youth are key. Youth risk behavior surveys and disease surveillance have not been performed to any significant degree for youth in Africa or India, and is a significant gap which needs to be addressed.
- **Impact Mitigation.** Reduce the health and social impact of AIDS on individuals, families, communities, and the health system. M&E strategies involve AIDS case reporting, in-depth studies, and observations and assessment of the availability/quality of care and support (TB, opportunistic infections). M&E experience in this area is limited and there is a need for good operational research. WHO is working on Quality of Life Indicators for developing countries that are promising for monitoring the success of HIV/AIDS mitigation efforts in Africa and India.

Technical Considerations

To be sustainable, the M&E activities must have

- Ministry of Health buy-in, commitment and dedicated M&E personnel or M&E contractor.
- Clear and easily defined program goals.
- Feasible evaluation objectives and designs.
- Clearly defined activities, roles and responsibilities of all collaborating partners--local, national, CDC, and other international agencies.

Operational Considerations

- An in-country resident CDC assignee who appreciates and is committed to on-going M&E, with at least ten percent of their time committed to oversight of M&E activities.
- One full-time dedicated government staff person responsible for M&E. There should also be a full-time local contractor, preferably a host country national, working closely with the MOH M&E person(s).
- Sufficient M&E liaison staff at CDC to provide the necessary technical support.
- An established plan for M&E collaboration between NACP, CDC, and USAID and its missions and contractors, to reduce the data collection burden and maximize its use.
- A clear operational plan for how M&E data will be fed back to program staff for use in designing program improvements, including specification of who will be responsible for taking M&E data and translating and disseminating it to programs.

Resources

Primary CDC units with experience in HIV- relevant M&E activities in Africa and/or India:

NCHSTP/DHAP-Intervention Research and Support
NCHSTP/DHAP-Surveillance and Epidemiology
NCHSTP/DSTD

NCHSTP/DTBE
NCCDPHP/DASH
NCCDPHP/DRH
OD/Global Health Office

In addition, various individuals across the agency have relevant experience. A list is available.

Additional resources that should be developed:

African Evaluation Association, Nairobi, Kenya
Behavioral/ Social Science Departments in African universities such as these:
Makerere University (Uganda)
Muhimbili University (Tanzania)
University of South Africa-Cape Town.

Key Partners

Existing

USAID
UNAIDS
Evaluation contractors (e.g., Macro)
U.S. universities (e.g., Emory, UC-SF)
NGOs

Potential

WHO
MOHs
NGOs
African experts
TVT/SYNERGY
FHI/IMPACT
UNC/MEASURE
Other U.S. (e.g., Georgia State, Tulane) and African universities and researchers

3.4 Training

Background
Training is an important component of any successful health intervention. Effective training is not a single, discrete event, but must be part of a program of complementary activities to improve the performance of defined tasks. The GAA training strategy takes into account the specific training needs for many diverse groups and programs and confirms that programs must be continuously adapted and updated.

Training is costly in human and financial resources and there is a practical limit to the amount of training that can be provided to (or absorbed by) any given audience. Training must be carefully focused, clearly targeted and must use methods that are both sustainable and likely to succeed.

Recognized Best Practices
All GAA Program Areas will include some training activities and choice of the best training solution for a particular audience will depend on local training expertise, and available materials and funding. No single best practice can encompass all trainees or all methods, but there are certain criteria that describe effective training:

- Training is based on a needs assessment that considers the roles and responsibilities of the trainees, the specific tasks, the current performance level, reasons for inadequate performance, and the available financial and human resources. Potential trainees should take part in the assessment.
- Training addresses local needs. Ideally, it should respond to specific priorities determined in a local process of consultation.
- A comprehensive long-term training plan exists which all stakeholders help to create. Depending on the audience, such a plan might be national, multinational, regional, or be organized by topic. The purposes of this plan are to use resources wisely, avoid duplication and contradictory messages, to encourage collaboration and coordination, and to provide a structure for monitoring and evaluation.
- When they return home, trainees have the necessary resources and other support to use the skills acquired. During training, trainees should practice skills using only those materials and equipment that will realistically be available to them later. Especially in resource-limited environments, this will require that trainers and specific Program Area planners communicate frequently (e.g., on available projected commodities) and agree on task descriptions.
- Training programs and activities are sustainable and/or build training capacity in local institutions.
- Training is practical and applied. Provide many opportunities for active, hands-on supervised application of skills. In other words—less theory, more practice.
- Training is based on adult learning concepts and learning methods. Trainees are partners in learning, not passive vessels; are actively engaged, and their own experience is considered a resource. (Many children will be trained under the GAA initiative, and interestingly, adult learning methods are shown to be most effective.)

- When projects are being planned, training requirements are considered from the beginning, not as an afterthought. Those with training expertise are involved in initial assessment and planning.
- Training materials and methods are refined and revised, after pre-tests in the field. Given the wide scope of GAA target audiences, cultures, and languages, all training materials must be field-tested. Technical content experts and training experts must decide when "generic" training materials can be used, and the degree of adaptation that might be required to reach a certain audience effectively. This will vary across Program Areas and audiences.
- Follow-up, supervision and further training will ensure quality, maintain and improve skills and motivate learners.

CDC Experience and Capabilities

Many CDC training programs have been developed in collaboration with international agencies, national governments, academic institutions and NGOs. CDC can offer has experienced staff who have worked in HIV/AIDS and in disease- or condition-specific programs in Africa and India. This represents significant institutional memory and experience, and has resulted in valuable contacts in the countries where GAA will be implemented.

CDC Approach

Promote coordinated, sustainable , locally relevant and appropriate systems of training (rather than brief, ad hoc workshops using imported materials and methods). Although recognizing that the urgency of the epidemic requires conducting some rapid, narrowly targeted training, planners should keep in mind for the longer term the enduring benefits of strengthening the local capacity to plan, conduct and evaluate training efforts at local, regional and national levels, and for diverse audiences.

The range of possible target audiences under GAA demonstrates the wide spectrum of training content, skills and styles that will be required. Training will focus on building skills to manage, implement and evaluate programs and will involve a wide range of technical areas, including blood donor counselors, epidemiologists, commercial sex workers, Ministries of Health and NGO program managers, religious leaders, laboratory technicians, regional military units, print and electronic media, legislative and community decision makers, birth attendants, pharmacists, informatics experts, lorry drivers, workplace health supervisors, slum youth and disadvantaged rural youth, traditional/informal medical practitioners, logistics managers, religious leaders, computer maintenance workers, peer educators, VCT counselors, home care attendants, translators who prepare syndromic-based education materials in local languages, school teachers, general clinicians and those in TB and STI programs, and faculty at nursing, medical and social work schools.

Training is only one of the ways to improve the way a task is done. One key to the success of a training program is the ability to identify when the solution to "poor performance" is to conduct training, or when another approach could be more effective. An aim of the GAA training strategy will be to build local capacity to make these determinations, to conduct Training Needs Assessments and to plan, conduct and evaluate training programs. Ministries, donors, NGOs and communities should not limit themselves to technical training considerations, but must also make the financial and administrative provisions that will promote sustainability, and ensure that trainees have the resources they require.

Illustrative Activities

1. Assist countries to create a comprehensive training plan, based on its GAA objectives.
2. Assess the local capacity to provide the training called for in all program areas in the country's plan, including financial, physical and human resources, and the whether there are appropriate and up-to-date training materials. CDC could facilitate prioritizing the proposed training activities.
3. Review the training plans for specific Program Areas and suggest ways to make training more effective and efficient. Look for possible areas of cooperation and collaboration among program area training plans and by region.
4. Improve a country's capacity by providing technical advisors and targeted technical assistance (such as training of trainers course [TOT], technical consultants) to perform training needs assessments, to plan, implement and evaluate training. When appropriate, encourage sustainable systems for training.
5. Provide expertise in designing curriculum, developing training materials and in adapting, testing and revising training programs.
6. Provide or arrange for training in certain interdisciplinary areas (especially public health, communications, management, applied epidemiology).
7. Encourage and support innovative training practices and research on training.

Technical and Operational Considerations

- Many national, language and cultural groups are involved. Coordination and collaboration are crucial, but may be difficult to attain.
- Effective training is based on accurate assessment of needs and target audiences.
- Determining the best match between a training need and a training method is a challenge. Building local capacity to plan, implement and evaluate training will be a priority. Sustainable systems for training should be a goal.
- The timeframe is short, and the need to provide training quickly must be balanced against the need for thorough assessments, planning and adaptation. Provide for updating training, such as through refresher courses, as epidemic conditions change.

Resources

CDC dedicated staff:

Public Health Advisor - Atlanta
Trainer (lead) in Atlanta
Trainer materials developer
Trainer(s) in Africa/India to work with field staff
Epidemiologist(s) to link specialty areas within CDC and work on course content
Program assistant/analyst

Figure 1 lists some CDC training programs.

VIII. Key partners

USAID
U.S. Peace Corps
UN Volunteers
UNICEF
WHO
PATH
Family Health International (Arlington, VA)
UNC/MEASURES Project (North Carolina)
MEASURE Evaluation/JSI Research and Training Institute, Inc (Arlington, VA)
Schools of Public Health in the US, Africa and India
TEPHINET and PHSWOWs
Fogarty International Center/NIH
CARE
The Carter Center
Global Health Action
Family Health International
World Bank
The Turner Foundation
Organizations working with HIV/AIDS in GAA target countries

Monitoring and evaluation

- It may be difficult to attribute changes in behavior to any given intervention.
- Training objectives should be linked to performance measurement indicators.
- Although a central unit should keep track of basic statistics on training, a particular focus of GAA should be to evaluate the quality and long-term results of training, in order to fine-tune best practices.
- A comprehensive training plan should be a benchmark both for national programs and for Program Areas.

Training Programs in CDC (EPO/PHPPO)

As part of best practices, the Epidemiology Program Office and DIH have worked with a variety of training resources across CDC that include the following programs. For the most part, courses are customized based on local needs and negotiation with MOH and other organizations within the country.

Type of course	CDC Center Institute Office	Target Audience	Epidemiology	Program design and management*	Communication and advocacy**	Policy development and analysis	Clinical skills
Epidemiology Information Strategies	Div of Applied Public Health Training/EPO	Post-doctoral health workers to public health practitioner	+++	+	+	0	0
Field Epidemiology Training Program	Div of International Health/EPO	Post-doctoral health workers to become public health practitioners	+++	++	++	+	0
Public Health Schools without Walls	DIH/EPO	Masters of public health training	+++	++	++	++	0
Data for Decision-Making	DIH/EPO	Health workers	+	+++	++	+	+ (varies with program and MOH priorities)
Public Health Prevention Specialist	DAPHT/EPO	Masters level (replaces PHA program)	+	+++	++	++	0
Sustainable Management Development Program	PHPPO	Public health leaders and managers	0	+++	++	++	0
Preventive Medicine Resident	DAPHT/EPO	Residency, public health leaders	+	++	++	+++	0 (can vary)
Public Health Leadership Institute	PHPPO	Public Health Leaders	0	++	++	+++	0

*= Program design and management includes program planning cycle of assessment, design implementation, and evaluation of health programs. May also include specific interventions with community.
** = Communication and advocacy include health communication, scientific writing, and advocacy for public health to policy makers.

Notes:
Category 1: There is nearly complete overlap between EIS and FETP with the FETP having additional management training through two mechanisms (within the FETP course and for some trainees via SMDP in Atlanta). The FETP is designed to train a somewhat broader public health practitioner. These courses offer the most concentrated epidemiology training. The PHSWOW is applied academic training resulting in a masters degree with a focus on epidemiology.

Category 2: The next grouping includes programs primarily provided to program implementers (health or public health) to increase their skills in selected public health content and include some training in epidemiology. Included in this group are the DDM and prevention services training.

Category 3: The final grouping includes courses for public health leadership. These provide training in policy and leadership as well as training in the program design and implementation cycle, but little epidemiology.

4. Care, Support and Treatment Strategies

CDC will assist countries to strengthen and expand care, support and treatment options for people suffering from HIV/AIDS and opportunistic infections. These strategies will build on the strengths of communities to provide options ranging from home-based care to clinical care and social support.

4.1 TB Prevention and Care

Background
About a third of the 32.9 million HIV-infected people worldwide are co-infected with *Mycobacterium tuberculosis*, and 70 percent of those co-infected live in sub-Saharan Africa. HIV is the most powerful known risk factor for reactivation of latent TB infection to active disease. High TB case rates in sub-Saharan Africa have been largely attributed to the escalating HIV epidemic. HIV-infected persons who become newly infected by *M. tuberculosis* and rapidly progress to active TB also contribute to the epidemic. Studies show that the host immune response to *M. tuberculosis* enhances HIV replication and might accelerate the natural progression of HV infection.

Recognized Best Practice
The World Health Organization (WHO) has declared TB as a global emergency and has recommended a framework of strategy and policy for TB control referred to as Directly Observed Treatment Short Course, or DOTS. The DOTS strategy:

1. Government commitment to TB control.
2. Passive TB diagnosis by smear microscopy.
3. Directly observed standardized short course therapy (usually 6-8 months duration).
4. Continuous and reliable drug supply.
5. Efficient record and reporting system.

The clinical response to TB treatment appears to be similar for those with or without HIV infection. In addition, clinical trials have shown that anti-TB drugs can *prevent* active TB in HIV-infected persons. The WHO and UNAIDS issued guidelines in July 1998 recommending the use of isoniazid TB preventive therapy as a component of basic care for persons living with HIV infection in settings with a high TB prevalence.

WHO, in collaboration with other international aid agencies, has implemented several initiatives to reduce the burden of TB in countries heavily impacted by HIV. The STOP TB Initiative launched in November 1998 promotes DOTS and aims to accelerate the control of TB by 1) greatly expanding the global coalition of partners working to control the disease, 2) pushing TB higher on international political and health agendas, and 3) significantly increasing the investment in TB control. The Pro Test Initiative aims to expand HIV counseling and testing services to reduce transmission of HIV, to reduce TB transmission by improved case finding and treatment, and to reduce TB reactivation in those infected with both HIV and *M. tuberculosis* through TB preventive therapy.

Please also see suggested readings in Appendix B.

CDC Experience and Capabilities

During the past 10 years, CDC has collaborated with WHO, IUATLD, and other international partners to provide training and technical assistance to establish or enhance national TB control programs and surveillance activities in Africa, Asia, Europe, and Latin America.

Examples:

- The Botswana Project, a collaborative effort between CDC and the Ministry of Health. Activities include training and the operations research in TB designed to improve the diagnosis, treatment and outcome of TB patients in Botswana.
- "Community TB Care in Africa" Project, a collaborative effort involving CDC, WHO, UNAIDS, IUATLD, USAID, the Royal Netherlands Tuberculosis Association (KNCV) and six African countries (Botswana, Kenya, Malawi, South Africa, Uganda, and Zambia). CDC provides technical expertise and mentoring to the urban and rural projects in Uganda.

CDC Approach

Work with governments, non-governmental organizations, and international organizations in the selected countries to improve the local capacity to prevent and treat TB disease in people living with HIV and improve the access for TB patients to HIV counseling and testing.

- Institute the DOTS strategy nationally. In addition to the five core elements of DOTS outlined above, WHO recommends Bacillus of Calmette and Guerin (BCG) vaccination for all children unless known to be HIV-positive or symptomatic with HIV. Conduct periodic surveillance for anti-tuberculosis drug resistance to ensure the adequacy of treatment regimens (but not solely to guide individual patient therapy).
- A core part of the package of care offered to HIV-positive persons should be to evaluate for TB disease, and, if absent, provide TB preventive therapy.
- All confirmed TB patients should be offered and have access to HIV education, counselling, and testing.
- Home-based care for AIDS patients with TB is often more cost-effective than hospital-based care, and should be implemented where possible.
- Integrated care of HIV-positive individuals with high rates of TB require collaboration between National TB and AIDS Control Programs.

Illustrative activities

1. In collaboration with WHO and IUATLD, conduct TB program reviews and promote DOTS coverage to ensure appropriate treatment of HIV/TB co-infected persons. Some countries may require training, laboratory supplies and equipment, technical assistance for anti-tuberculosis drug resistance surveys and information systems to achieve this.
2. Assist in assessing the administrative systems in place for TB and of HIV/AIDS services. For each, determine if there are well-established outpatient clinics (hospital or community) where such services are provided. Identify the TB and HIV/AIDS related services provided within the primary health care system. Implement pilot demonstration projects to assess the optimal means of providing TB prevention and care services at various levels (e.g., clinic, community).

3. Assist in implementing and expanding home-based care where feasible. This may best be introduced via pilot projects in urban and rural settings according to models from Francistown, Botswana; Kiboga District, Uganda and Machakos District, Kenya.
4. Assist with active case finding for TB among HIV-positive persons identified through voluntary counselling and testing.
5. Help develop, implement and monitor TB preventive therapy program for HIV/TB co-infected persons. After active TB has been excluded, TB preventive therapy should be implemented as early as possible in HIV disease course.
6. Assist with strategies to conduct or expand contact investigations around active TB cases, giving high priority to HIV-positive TB patients. Consider pilot projects to assess the feasibility and cost effectiveness of providing HIV counselling and testing to contacts of HIV positive TB patients, and offering TB preventive therapy to those who are HIV positive.
7. Promote cotrimoxazole prophylaxis among TB/HIV cases under treatment to prevent added morbidity and mortality from common bacterial pathogens (Please see technical strategy 4.2 Treatment and Prevention of other Opportunistic Infections).
8. Provide training for all these activities.

Technical considerations

HIV surveillance among TB patients is non-existent in most countries, so the extent to which the TB and HIV epidemics overlap is still largely unknown. Access to voluntary HIV counselling and testing services likewise is limited and will be a major obstacle to both HIV testing of TB patients and to providing TB preventive therapy to co-infected persons.

- Exclude active TB in persons with HIV who are being evaluated for TB preventive therapy, but the optimal approach for screening for active disease remains unclear. UNAIDS currently recommends a chest x-ray, perhaps not feasible in many settings.
- The use of tuberculin skin testing to establish *M. tuberculosis* infection, the duration of isoniazid therapy, and the appropriateness of short-course regimens (two months of rifampin/pyrazinamide) may vary by country.
- TB control programs should have as the highest priority fully carrying out the DOTS strategy and helping develop local technical guidelines and evaluation for TB preventive therapy. AIDS control programs should assume primary responsibility for TB preventive therapy as part of a package of care for persons living with HIV.
- Countries may lack sufficient laboratory capacity to conduct drug resistance surveys. Identify reference laboratories.
- Significant misunderstanding of TB preventive therapy still exists and substantial training and support must occur before widespread implementation is realistic.
- Training, support for and supervision of health care and community workers and volunteers must receive high priority successfully to implement and sustain the activities proposed.

Operational Considerations

- Many countries face severe economic stress and may lack adequate supplies of quality first-line TB drugs, laboratory supplies and equipment.

- Many countries lack TB surveillance systems to monitor TB program performance.
- TB and AIDS control program coordination is lacking.
- Countries lack sufficient HIV testing kits, VCT centers and the management and technical skills to operate such centers.
- Collaboration with WHO is essential for DOTS implementation and with UNAIDS for TB preventive therapy.
- Compared to AIDS control programs, TB control programs are poorly funded.

Resources
The human resources to support the activities proposed in this initiative include a wide range of CDC staff already involved in international TB projects and who have participated in TB-related work in consultation with the IUATLD, WHO and UNAIDS. Atlanta and field-based CDC staff will be available to provide support to in-country LIFE assignees and collaborators from other agencies in epidemiology, surveillance, operations research, data management, laboratory, training, behavioural science and economic analyses.

CDC staff or organizational units
DTBE (Atlanta-based and field assignees)
The BOTUSA TB Project in Botswana
Division of HIV/AIDS
Division of STD Prevention

Other organizations or individuals
National TB Controllers Association
Advisory Council for the Elimination of TB

Key partners
National TB Program Managers and National AIDS Control Program Managers
WHO/HQ and Endemic Bacterial and Viral (EBV) and Control, Prevention and Eradication (EBV) Teams
Regional TB Advisor, Regional Office for Africa (AFRO) of WHO, Harare, Zimbabwe.
WHO Representatives in participating countries
UNAIDS/HQ
UNAIDS local and regional advisors
Local VCT centers
National TB reference laboratories
HIV testing services
IUATLD, where active
Local training institutions
Relevant local NGOs

Monitoring and Evaluation
Realistic indicators for monitoring and evaluating TB prevention and care activities should include process or input and output indicators, treatment outcomes, acceptability of services such as home or community-based care. Outcome indicators or program effects will be difficult to monitor and evaluate in the short term. Evaluating TB prevention and care activities should be based on clear program objectives. Indicators must be defined and collected at each level: the home and community/local, health unit/District, Provincial/Regional/National and Global.

As an example, a TB prevention, care and support program for persons living with HIV/AIDS might have the following objectives and indicators:

1. To provide health and social services (including community or home based care) to >75% of persons diagnosed with TB and HIV/AIDS.
   A. *Process (input) indicators collected at the provincial/regional/national level*
      1. Percent of health facilities providing care to HIV patients with capacity to diagnose TB.
      2. Percent of health facilities providing care to HIV patients with capacity to manage TB.
   B. *Process (input) indicators collected at the health unit/district level*
      1. Percent of HIV patients diagnosed with TB receiving community or home-based care.
      2. Percent of TB patients diagnosed with HIV infection receiving community or home-based care.

2. To ensure a referral system between hospitals and community and home based support services.
   A. *Process (input) indicator collected at district and national level*
      1. Percent of health facilities with standard procedures for referring patients to and from health facilities and community or home-based support services.
   B. *Process (input indicator collected at all community and district level*
      1. Number of persons with HIV/AIDS and TB who received community or home-based support services.

Other M&E indicators:

- Proportion of HIV infected patients who are appropriately evaluated for TB disease, diagnosed with TB, and who complete TB therapy.
- Proportion of HIV infected patients (in whom TB disease was excluded) who are referred, who start and who complete TB preventive therapy.
- Proportion of TB patients counselled and tested for HIV.
- Proportion of TB patients who received HIV counselling and testing diagnosed with HIV infection.
- Proportion of AIDS/TB patients referred to community or home-based care or receiving community or home-based care.
- Proportion of TB patients covered by DOTS (e.g., using the proportion of case in "DOTS districts").
- Level of drug resistance in TB patients, particularly those with AIDS and TB.

Implications for Other Strategies

- Capacity for smear microscopy and surveillance for drug resistance will relate to 3.1 Laboratory Technical Support.
- Adapt or develop Information Systems to support data management activities related to TB surveillance, management and treatment outcomes of patients with TB disease and TB infection and program monitoring and evaluation.
- Provide preventive therapy to HIV patients infected with TB.

- To implement or enhance community-based care for TB/HIV patients and TB preventive therapy in HIV patients, training must target national and district policy makers, local leaders, health care workers, community workers, volunteers, patients and family members. This training could be conducted by some trainers also involved other prevention and treatment activities.
- This initiative also overlaps with 2.1, Voluntary Counselling and Testing initiative. TB patients must have access to HIV education, counselling and testing to learn about their HIV status so that appropriate clinical care and follow-up is provided and referrals are made to appropriate community-based organizations for support and care.

4.2 Prevention and Treatment of Opportunistic Infections (non-TB)

Background
Knowledge of the incidence and prevalence of opportunistic infections (OIs) in HIV-infected adults in sub-Saharan Africa is limited by the general scarcity of diagnostic services and surveillance mechanisms. In addition to TB, also common are bacteremias caused by *S. pneumoniae* and non-typhoid salmonella; toxoplasmosis; pneumonia caused by *S. peumoniae* and *H. influenzae*; diarrhea caused by cryptosporidium, isospora and other organisms; meningitis; and wasting syndrome.

Regional differences appear in OIs, with Kaposi's sarcoma more common in East Africa and cryptococcosis more common in South Africa. Less severe manifestations of HIV disease, e.g., oral candidiasis, oral hairy leukoplakia, and non-specific dermatitis, are common yet may not be reported in hospitalized patients. Less is known about incidence and prevalence of OIs in HIV-infected children.

In industrialized countries, prevention of OIs has long been the mainstay of care for HIV-infected persons, particularly before the advent of highly active antiretroviral therapy. Although the spectrum of HIV-related illnesses in Africa differs from that in industrialized countries, several of the most common OIs are amenable to prevention through antibiotic prophylaxis.

Chemoprophylaxis with isoniazid is effective in reducing the incidence of TB in HIV-infected persons. (Please also see 4.1, TB Prevention and Care.) TB Prevention and Care. Recent studies from Côte d'Ivoire have documented that chemoprophylaxis with trimethoprim/sulfamethoxazole (TMP/SMX, cotrimoxazole) can significantly reduce morbidity and mortality in HIV-infected outpatients. Use of TMP/SMX prophylaxis in HIV-infected children has not been evaluated in Africa. To date, no other prophylaxis interventions have proven efficacious in African studies. Specifically, pneumococcal vaccination (23-valent vaccine) has been evaluated in outpatients in Uganda with no protective effect found, but a significant increase in all-cause pneumonia was found in one study.

Based on these considerations, in addition to TB prophylaxis, making TMP/SMX prophylaxis of OIs more available will be a priority for GAA care-related activities. For this to happen, however, significant barriers must be overcome:

- HIV testing: Most persons with HIV infection remain undiagnosed until they present with advanced HIV disease. Where available, HIV tests are expensive.
- Medical personnel training: Most medical personnel have no experience in prescribing prophylaxis or in monitoring patients for drug toxicity.
- Access to medical care, including medications: Many persons who are aware of their HIV status cannot afford medical care, including daily prophylaxis, despite the relatively low cost of this intervention by U.S. standards.
- Applicability of results to other geographic locations: The spectrum of HIV-related OIs varies by geographical area. Furthermore, resistance of endemic bacterial flora to TMP/SMX also varies considerably. It is therefore not clear that TMP/SMX will be beneficial in all parts of Africa.

Treatment of established OI is largely unavailable in sub-Saharan Africa because both trained personnel and diagnostic facilities are scarce. More seriously, drugs are unavailable. Rural areas

and clinics in villages or small towns are usually the most resource-constrained; some capacity to diagnose and treat OIs may be available in the larger cities, but treatment is frequently available only to those who can pay. Syndromic treatment procedures have been developed for use in settings that lack diagnostic facilities but these procedures have not been evaluated in a setting in which diagnostic capacity is available. Furthermore, health care personnel may lack appropriate training in the use of such procedures.

Recognized Best Practices
Prophylaxis:

- Prophylaxis against TB is considered in the TB section, above.
- No international organizations have recommended TMP/SMX prophylaxis in Africa, for either adults or children. However, in Côte d'Ivoire, a Ministry of Health expert panel has proposed indications and monitoring recommendations (for adults) based on the two completed clinical trials.

For treatment guidelines, please see suggested readings in Appendix B.

CDC Experience and Capabilities
CDC has led efforts to develop guidelines for preventing OIs in the United States and has experience in adapting them for use in other areas of the world, including Côte d'Ivoire and Latin America. One strength of CDC in international work is its longstanding partnerships with Ministries of Health and various host country NGOs. CDC has a longstanding history of providing technical assistance, training, and program evaluation in African countries, ranging from specialty areas of HIV/AIDS to more comprehensive programs such as child survival. CDC has collaborative relationships with numerous international aid organizations and NGOs, including USAID, UNAIDS, WHO, the Institute of Tropical Medicine and Hygiene in Antwerp, the London School of Tropical Medicine and Hygiene, the Fogarty International Foundation and others.

CDC Approach
CDC and USAID can help to increase available counseling and testing for HIV, develop guidelines for prevention of OIs in adults and children, provide TMP/SMX prophylaxis and evaluate prophylaxis programs, make available basic drugs for treatment of OI, develop and evaluate syndromic treatment procedures and train medical personnel in their use, and, where appropriate, expand laboratory diagnostic capacity and train laboratory personnel. These activities should be integrated with other aspects of the GAA, namely prevention and treatment of TB, palliative care and antiretroviral therapy.

Illustrative activities

1. Increase availability of voluntary counseling and testing for HIV in health care and other settings.
2. Develop regional guidelines for preventing OIs.
3. Implement TMP/SMX prophylaxis (including procurement of drugs, when necessary) and evaluate prophylaxis programs.
4. Develop national standards of care for OI for both adults and children.
5. Develop a list of essential drugs for AIDS prevention and care.
6. Work with international partners to provide essential drugs (for those that cannot be purchased directly with GAA funds) or seed money for an essential drugs program. Also

identify international partners to provide technical assistance and training for obtaining, managing and distributing drugs, perhaps including the development of a revolving drug fund.

7. Develop and evaluate treatment procedures for AIDS-related disease.
8. Train clinicians in OI prevention, diagnosis, and management.
9. Where appropriate, expand laboratory capacity for diagnosis of OIs, including procuring laboratory and radiographic equipment, and training laboratory personnel.

Technical and operational considerations

Developing regional guidelines for prevention and treatment of OIs will require significant input from clinicians and public health authorities in sub-Saharan Africa. Within each country, a program to initiate TMP/SMX prophylaxis must consider the barriers described above and must evaluate such programs. Making essential drugs available will require leveraging of partners and long-term planning to guarantee a sustainable drug supply. Training of health care providers in use of syndromic treatment procedures will require a significant commitment and will be pointless if effective drugs are not available. Strengthening laboratory capacity must focus on laboratory/radiographic tests that will allow improved treatment over what would be offered using syndromic treatment alone. Improving lab capacity will require laboratory and radiographic equipment, methods to ensure sustainability, and laboratory staff training.

Resources

CDC's Division of HIV/AIDS Prevention, particularly the Office of the Director, the International Activity, and the Epidemiology Branch, have developed guidelines for prevention of OIs in HIV-infected persons, conducted clinical trials of cotrimoxazole in HIV-infected persons in sub-Saharan Africa, and carried out epidemiological investigations of occurrence and treatment of OIs in HIV-infected persons. The National Center for Infectious Diseases has expertise in specific parasitic and bacterial OIs, including laboratory expertise in diagnosis and antimicrobial resistance assays.

In-country: Public health authorities, caregivers of HIV-infected persons in in-patient and out-patient settings, and reference laboratories and their staffs will be instrumental in developing appropriate strategies. NGOs and their local counterparts, especially those involved in HIV care, will be similarly instrumental.

Key partners

USAID
UNAIDS
WHO
World Bank

Monitoring and evaluation

- Regional/national guidelines for the prophylaxis and treatment of OIs, in both adults and children.
- Distribution of TMP/SMX prophylaxis; number of patients, number of doses of medication distributed.
- Assess adherence to prophylaxis, associated toxicity.
- Assess breakthrough diseases among persons prescribed prophylaxis, and associated

antimicrobial resistance.

- Percentage of health care facilities with capacity to manage HIV-associated conditions.
- Percentage of clinical staff with appropriate training.
- Percentage of health care facilities with available drugs for treatment of OIs following regional/national treatment guidelines.

4.3 Palliative Care

Background
The concept of palliative care grew out of pain relief and comfort measures for cancer patients. Since AIDS is a fatal disease with many curable manifestations, the distinction between active, curative treatment and palliation is blurred. As a result, current definitions of palliative care define this medical care service as a more holistic one that begins earlier in the course of a chronic, fatal medical condition.

The World Health Organization defines palliative care as "...the active total care of patients whose disease is not responsive to curative treatment. Control of pain, of other symptoms, and of psychological, social, and spiritual problems is paramount. The goal of palliative care is achievement of the best quality of life for patients and their families…. Palliative care affirms life and regards dying as a normal process...neither hastens nor postpones death...provides relief from pain and other distressing symptoms...integrates the psychological and spiritual aspects of care...offers a support system to help family cope during the patient's illness and in their own bereavement."

Even without the impact of the AIDS epidemic, the health system in many African countries are barely coping with the burden of diseases such as malaria, bacterial pneumonia, TB and diarrheal diseases. The numbers of doctors and nurses are grossly inadequate, medications and supplies are in extremely short supply and are often diverted from Ministry of Health hospitals to private clinics. Deaths among medical personnel due to AIDS have exacerbated the situation, and shortages of medical personnel can be expected to worsen. In Malawi, for example, an estimated 70,000 new AIDS cases occur annually. Over 50 percent of the beds on medical wards are occupied by patients who are HIV+ in most of the countries targeted for the LIFE initiative. Existing health infrastructures are totally inadequate to provide in-hospital care for AIDS patients, and thus there is great pressure on hospital personnel to discharge AIDS patients quickly, with little or no treatment.

To cope with this crisis, many nations have encouraged "home-based care" (HBC) for persons with an HIV or AIDS diagnosis. Many programs have been developed, and some of provide good models that ease suffering and improve quality of life. For example, the Chikankata Hospital program in Zambia provides both hospital care and an intensive program of followup in the community. The AIDS Support Organization (TASO) in Uganda has established eight-day care centers that provide medical treatment, counseling, and food supplements for AIDS patients, plus a limited program of home care.

Unfortunately, in many countries, home and community-based care programs are very weak and provide few services. Links to local health centers and hospitals are poor, and HBC volunteers have little or no access to any drugs for palliative care. Diagnosis of tuberculosis and other opportunistic infections is often ignored. Training of HBC volunteers often over-emphasizes "counseling" and does not provide them with practical skills in home nursing. Food supplement programs are either not available or very inadequate, and lack of food for patients and their children is a serious problem.

Recognized Best Practices
"Best practice" guidelines for providing Palliative Care to AIDS patients in resource-poor countries have not been developed but a number of Palliative Care models can and do work in many developing countries. The UNAIDS Best Practice Collection (http://www.unaids.org),

"Comfort and Hope" presents six successful case studies on family and community care which use different approaches. Common elements shared by two or more of the projects:

- Spiritual motivation or guidance (3 of the projects).
- Participation of a well-known or well-connected individual (2).
- Moral support of local leaders and authorities (4).
- Focus on marginalized groups such as injecting drug uses (3).
- Top-down (e.g., mission hospital, local Red Cross center) compared with community-initiated approach (3).

A USAID discussion paper entitled "Palliative Care for HIV/AIDS In Less Developed Countries" describes the following medical elements of palliative care:

- Pain control - Treat mild pain with acetaminophen and/or non-steroidal anti-inflammatory drugs (NSAIDs), followed by the treating moderate pain adding codeine, and severe pain, adding morphine. Morphine is not available to most people in less developed countries, constituting a point of intervention.
- Nutritional support - Poor intake, increased metabolism, decreased absorption, and diarrhea all contribute to nutritional deficiency among persons with HIV/AIDS. 1) Assess nutritional condition early in the course of HIV, and particularly during times of OIs. 2) Provide a balanced diet of locally available foods complete in protein, calories and fiber. Pay attention also to hydration and foods rich in vitamins and minerals. WHO guidelines exist for appropriate nutrition and for special preparation of food (food safety).
- Prevention/Treatment of OIs – Please refer to the strategies 4.1 TB Prevention and Care and 4.2 OI Prevention and Care.
- Medical Treatment for Symptom Management - This includes symptomatic management of fever, nausea and vomiting, diarrhea, skin and genital problems, cough and difficulty in breathing, tiredness and weakness, anxiety and depression, mental confusion and dementia.
- Alternative/Traditional Healing - WHO estimates that 80 percent of the worldwide population uses some type of alternative therapy. The use of alternative therapies may signal the active participation of patients in decision-making and assuming control of their health. Herbs, in particular, are commonly used. A few herbs have been documented to have detrimental effects, but most have no effect or lead to subjective improvement in symptoms and quality of life.
- Counseling/Psychosocial support - Counseling, psychosocial support, emotional and spiritual support, bereavement and support for families and caregivers are highly variable and depend upon the local culture. However, they are in most cases the most important elements of effective palliative care. Also consider the inter-relation between care and prevention. Behavior modification (Technical Strategy 2.7) leading to HIV prevention may be most effectively achieved within a system of comprehensive care.

Other components of palliative care:

- Home health assistance - One of the main services which home-based care volunteers are expected to provide are those services which "home health aides" in the U.S. provide to

chronically ill, home-bound patients. However, home-based care volunteers in developing countries contend with very difficult circumstances, including very poor housing and the lack of electricity and clean drinking water. Some of these volunteers see their main role as assisting with household tasks such as fetching water and firewood for cooking, cleaning the household and compound, washing the patient's bedclothes, and cooking simple meals for patients and their families. Some home-based care volunteers have been trained to provide care to bedridden patients such as bathing, turning, and prevention of pressure sores. Adequately trained volunteers can also teach these skills to family caregivers.

- Care of families with multiple members infected with HIV/AIDS - Because of the sexual transmission of HIV, and maternal to child transmission (MTCT), it is not unusual for more than one family member to be HIV-infected. Current home-based care programs are based on models developed for palliative care for cancer patients, where it is exceedingly rare for two members of a household to be dying of cancer at the same time. Specialized services should be developed for families in which both parents are ill and dying, and for families where not only the parents but also a younger child may have HIV infection.

CDC Experience and Capabilities

CDC has worked with The AIDS Support Organization (TASO) in Uganda since 1990 to help assess and improve its services. TASO is a non-governmental community-based organization that provides community and home-based care to persons living with HIV/AIDS and their families. CDC was instrumental in helping design and implement a TASO "management information service" which now has a database containing information about thousands of TASO clients and the medical and counseling services they receive. CDC is currently providing technical guidance to an assessment of HBC services in Malawi.

The Ryan White CARE Act, coordinated by HRSA, offers technical assistance and other training interventions to enable local participants to be as effective as possible. Several HRSA grantees are operating palliative care programs in the United States and its territories. One example is Estancia Corazon, Inc, a non-profit community-based organization located in Myaguez, Puerto Rico, that provides care for medically indigent persons in the final stages of AIDS. This organization operates in a resource-poor area similar to sites in Africa and Asia.

CDC Approach

CDC can provide technical expertise in 1) evaluating existing palliative care programs, 2) assisting local partners in designing and implementing palliative care programs, 3) assisting with education and training to improve services and 4) developing management and information systems (MIS) for palliative care.

Cooperation with USAID is essential to the success of this approach because USAID provides funding to home-based and community-care programs in several of the targeted countries in Africa (e.g., Uganda, Malawi, Zambia), and most of these programs provide palliative care to persons living with HIV/AIDS. USAID could provide the funding for the basic program and CDC provide technical assistance in project design, supervision, training, management information systems development, monitoring, and evaluation. CDC could also provide simple drugs and commodities considered essential to palliative care.

Local expertise, planning, participation, and guidance are central features of successful care and treatment infrastructures, including palliative care. A comprehensive palliative care program includes interventions for 1) pain management, 2) nutritional support, 3) treatment of OIs, 4)

integrating traditional healing approaches and traditional healers in medical care, and 5) individual and family counseling and psychosocial support.

The first step should be to recruit local experts to ensure their participation in all steps of the process. Following the buy-in of local participants, identify gaps by assessing current practices, resources, materials, and training opportunities. This assessment then leads to planning and implementing palliative care services. Throughout this process, patients, providers, funding sources (government and NGO), family, and community resources must all be included.

The matrix below illustrates these relationships.

	Pain Control	**Nutrition**	**Prevent/Treat OIs**	**Symptom Mgt**	**Link to Traditional Healer**	**Counseling, Psychosocial Support**
Assess current practices						
Resources, Training Opportunities						
Planning Activities						
Available Resources to Fill Gaps						
Outcome Evaluation Strategy						

Illustrative Activities

1. Assess the various models for providing palliative care to AIDS patients in developing countries to identify best practices criteria and develop guidelines.
2. Assess the existing programs (governmental and non-governmental organizations) in the countries providing palliative care to AIDS patients to identify current practices, resources and training needs.
3. Establish and enhance linkages between hospitals, health units and programs that provide palliative care to AIDS patients.
4. In collaboration with the MOH, NGOs, and donors, provide training to health providers, community health care workers, community volunteers and family members.
5. Assist with efforts to inform, educate and mobilize the community to promote community understanding and secure support.
6. In collaboration with the MOH, WHO and UNAIDS and other donors, establish a list of essential drugs and supplies (bandages, soap, alcohol, etc). This may require providing infrastructure support such as storage facilities and technical assistance to procure, distribute and maintain a steady supply of drugs and supplies. This might also include a "minimum care package" to be used by family members and community workers.
7. In collaboration with WHO/UNAIDS and other collaborators, identify donors to procure the drugs and supplies needed for palliative care.

Technical Considerations

Make available the necessary tools for pain, nutrition, OI, and symptom management. These include medication, necessary laboratory support services, and training.

Operational Considerations
A key operational consideration is the initial and continued ownership of and partnership with local resources and experts. Given the family and community-based nature of palliative care, it cannot exist without such a true partnership.

Resources
Resources needed cut across the spectrum—human resources (including training), financial resources, and material resources (e.g., medications and supplies).

CDC staff or organizational units:

NCHSTP/DHAP (Prevention Services Research Branch, International Branch)
NCHSTP/DTBE (Communication and Education Branch; Evaluation Section; Surveillance and Epidemiology Branch)
NCHSTP/DSTD (Training and Communication Branch)
EPO/PHPPO

Key Partners

HRSA
USAID
UNAIDS
WHO
Local experts
Community resources
NGOs
Government
Private industry (i.e. pharmaceutical companies)

Monitoring/Evaluation
Some of the palliative care interventions may actually lead to improvement in morbidity and mortality, but the focus of palliative care is to improve the quality of life for the individual and family at all stages of disease, including death. Quality of life indicators include physical functioning, physical symptoms, psychological symptoms, satisfaction with providers and care, perceived control over health interventions, social relationships and support, and spiritual and religious needs and wishes. Most of the scales that have been used to measure these and other quality of life indicators have been studied in North American and European culture and many could be adapted in the target countries through consultation with local social scientists and other experts.

4.4 Innovative Use of Antiretrovirals

Background

Antiretroviral therapy as disease modifying therapy for established HIV infection has produced dramatic effects on morbidity and mortality among HIV-infected patients in industrialized countries, but for developing countries, where 90 percent of AIDS cases occur, these drugs are not widely available because of the high costs and technical infrastructure required. The introduction of antiretroviral drugs has widened the discrepancy in the quality of AIDS care between rich and poor countries. Nonetheless, the use of antiretrovirals is increasing in resource-poor settings as the result of patient demand and various international initiatives.

Antiretroviral therapy is also used in some circumstances in an effort to prevent HIV transmission. These include occupational exposures (such as among health-care workers), non-occupational exposures (such as sex without the use of a condom and inadvertent sharing of injection drug equipment), and mother-to-child transmission (intrapartum and through breast-feeding).

Recognized Best Practices

A few coordinated efforts exist for providing antiretroviral drugs as disease modifying therapy in Africa. Based on observations from the 1999 International Conference on AIDS and STDs in Africa, held in Lusaka, Zambia; and the XIIIth International AIDS Conference in Durban, South Africa, include the UNAIDS HIV Drug Access Initiative Pilot Programs in Uganda and Côte d'Ivoire, a national effort in Senegal, and some treatment programs in South Africa. Patients in these and other countries are receiving treatment with antiretroviral drugs, if not through a systematic effort, then through the efforts of dedicated individual clinicians. Other efforts of note outside Africa include a country-specific programs in Thailand and Brazil and UNAIDS Initiatives in Chile and Vietnam.

As part of their "Best Practice" collection UNAIDS has developed materials related to the considerations for the implementation of such programs into developing countries (*UNAIDS: Access to drugs. UNAIDS Technical Update. UNAIDS Best Practice Collection. Geneva: UNAIDS; October, 1998.)*

Modules:

1. Introduction to antiretroviral treatments.
2. Introducing antiretroviral treatments into national health systems: economic considerations.
3. Planning and integration into health services.
4. Safe and effective use of antiretroviral treatments in adults with particular reference to low and middle income countries. Updated 2000.
5. Laboratory requirements.
6. Reducing mother to child transmission.
7. Treatments following exposure to HIV.
8. Regulation, distribution, and control.
9. Ethical and societal consideration.

The most authoritative and up-to-date guidelines are published by the U.S. Department of Health and Human Services through the Centers for Disease Control and Prevention, including guidelines for adults/adolescents, children, management of post-exposure prophylaxis in occupational settings, and non-occupational settings. They can be used as an optimal model for care of individual patients within an initiative and serve as an excellent teaching tool and resource for practitioners, and are periodically updated and freely available at http:\\www.hivatis.org. The

International AIDS Society also publishes authoritative guidelines that serve as an excellent resource. (*JAMA* 2000;283:381-390., http:\\www.jama.com)

A revision of the WHO guidelines (module 4 above) was to have been completed by July 2000. These guidelines will be aimed at resource-poor settings and will provide a rational approach to use of antiretrovirals in these settings.

The guidelines developed by DHHS can be considered as outlining the optimal goals, but strict adherence to them may be unattainable for all individuals in developing countries. Some countries have developed country-specific guidelines that may serve as templates.

CDC Experience and Capabilities
CDC is working with UNAIDS on the UNAIDS HIV Drug Access Initiative Pilot Program in Uganda and Côte d'Ivoire. CDC provides technical expertise to this initiative in the following manner:

- Assess the antiretroviral component of the initiative.
- Provide technical assistance to develop viral load and CD4 cell count testing for the evaluation.
- Develop protocols to monitor response, adherence, and emergence of resistance to antiretroviral drugs.
- Utilize data from these evaluations to help identify novel antiretroviral prescribing and monitoring guidelines.

HRSA has extensive experience in developing local capacity in HIV care, local and regional planning.

CDC Approach
CDC recognizes the importance of the availability of antiretrovirals for people living with HIV/AIDS in the developing countries. However, given the high cost of and sophisticated infrastructure needed for ARV therapy on one hand and the poor health resources and living conditions in most countries targeted by the GAA initiative on the other, we favor realistic and durable actions. This approach will avoid non-sustainable programs that will disappear once external assistance ends.

CDC recognizes how critical it is to develop the infrastructure needed to provide antiretroviral therapy in the context of comprehensive AIDS care services and will work toward the following two main objectives: 1) Improve local capacity (human and infrastructure) in the use of antiretrovirals, and 2) promote judicious use of antiretrovirals. Antiretroviral therapy is seen as one component of a comprehensive AIDS care package, but not all persons will have access to these drugs. Where antiretroviral drugs are available, the care should include other components such as psychosocial support and adequate prophylaxis, diagnosis and treatment of opportunistic illnesses, as described in the relevant sections (Please see sections 4.1 and 4.2).

CDC will work to identify countries where there is expressed interest in and capability to begin targeted programs involving antiretroviral treatment as disease-modifying therapy for established HIV infection. Ideally, these will be coordinated with other treatment programs involving opportunistic illnesses associated with AIDS. However, the sophistication involved in treating and monitoring patients on antiretroviral therapy will necessarily focus the programs at places having adequate clinical and laboratory capabilities.

CDC will assist countries that wish to use antiretroviral treatment as preventive therapy for prevention of transmission of HIV in occupational and non-occupational settings. CDC supports antiretroviral therapy as an intervention in preventing mother-to-child transmission (MTCT) of HIV, as outlined in technical strategy 2.2.

CDC anticipates working with other international partners, such as UNAIDS, to develop strategies to decrease the cost of antiretroviral drugs for developing countries, but will not provide direct funding.

CDC may provide technical assistance and training to develop the capacity and infrastructure to perform such monitoring. CDC is willing to participate in identifying and validating simpler, more economical alternatives to monitoring antiretroviral therapy.

Illustrative Activities

Treatment of Established HIV Infection

Examples of activities toward improving local capacity in the use of antiretrovirals:

- Develop tailored treatment guidelines.
- Train health care workers.
- Explore alternative means of monitoring patients on antiretroviral therapy.

Examples of activities promoting judicious use of antiretrovirals:

- Develop policy on distribution and use.
- Identify appropriate and innovative approaches for their use in selected countries.
- Implement innovative approaches to the targeted use of antiretrovirals.

Prevention of transmission of HIV in occupational and non-occupational settings
(Please see separate technical strategy, 2.2, on MTCT.)

- Develop a policy and treatment guidelines on the use of antiretrovirals by health-care workers following inadvertent exposure to HIV.
- Develop a policy and treatment guidelines on the use of antiretrovirals following non-occupational exposures to HIV, such as in the case of sexual contact without a condom (including sexual assault) and sharing of injection drug equipment.

Technical considerations

Initiate training for all medical personnel, including physicians, nurses, pharmacists, laboratory personnel and social workers.

Medical practitioners providing antiretroviral drugs need to be trained not only how to select and provide appropriate antiretroviral therapy, but also to manage these drugs. Management includes ordering and interpreting laboratory results, as well as interpreting clinical indicators of patient response. Clinicians must be trained to manage the myriad side effects from antiretroviral drugs.

Other facets of providing antiretroviral therapy include promoting adherence to individual drug regimens and providing the necessary support to sustain therapy over time. Additionally,

guidelines should be developed to train health care workers in making assessments of a patient's ability to sustain therapy once started.

Laboratory Monitoring

To provide optimal antiretroviral care, a clinician would ideally have access to laboratory capabilities for monitoring therapy, including tests for biological indices such as complete blood count with differential, serum chemistries, and liver function tests. The primary tools for monitoring response to antiretroviral therapy are CD4+ cell count and viral load tests.

Some labs in the developing world can perform the tests for biologic indices, but the availability of CD4+ cell count and viral load testing is very limited and resistance testing nearly absent. In addition, few laboratories in the developing world have the sophistication, facilities (including reliable electrical power), technical staff, and other resources to manage automated CD4+ or viral load testing. These technologies should be limited to laboratories generally in major medical institutions or research labs. When available, the cost of an individual test may be prohibitive. Considerations for providing these tests should be incorporated into antiretroviral therapy programs.

At present only a handful of laboratories in developing countries would be able to provide genotypic resistance testing to antiretroviral drugs by automated sequencing technologies. In general, acquisition of this type of technology outside of a research environment would not be justifiable at this time.

Operational Considerations.

In-country laboratory capabilities countries will be assessed out by another team within the GAA initiative. The results from that analysis can help to direct the necessary efforts at training and implementation.

Acquisition, distribution, and accountability of drugs

To assure maximal utilization of antiretroviral drugs systems should be developed in each country to manage the acquisition, distribution, and accountability of drugs. The UNAIDS HIV Drug Access Initiative has addressed this issue in Uganda and Côte d'Ivoire, providing excellent examples for study and adaptation.

HRSA also has resources to assist with developing a system of ARV acquisition and distribution, and training of health care providers.

Resources

CDC staff or organizational units
NCHSTP/DHAP-SE/International Activities Branch
NCHSTP/DHAP-SE/Epidemiology Branch
NCHSTP/DTBE
HRSA

Key partners

UNAIDS
USAID
HRSA
International AIDS Society
FSTI – International Therapeutic Solidarity Fund
IAPAC – International Association of Physicians in AIDS Care

Pharmaceutical Industry
Makers of diagnostic tests such as viral load and cd4 count testing

Monitoring and Evaluation

- Number of patients who have accessed antiretrovirals in a LIFE supported initiative.

- The types of drug combinations patients receive as:
  1. HAART (Highly active antiretroviral therapy)--Intent of regimen design is to provide maximal suppression of viral load in plasma. The rationale for describing a regimen as HAART will be based on those combinations listed as preferred or alternative regimens in the U.S. DHHS guidelines. As of January 2000, this would include the following (modify in accordance with the most up-to-date US DHHS guidelines):
     2NRTI + NNRTI
     2NRTI + PI
     3NRTI (if includes abacavir)

  2. 2NRTI based regimens--Intent of regimen design is to suppress viral load in plasma, though it may not be maximal.
     2NRTI +/- HU

  3. Other regimens not categorized above.

- The type and frequency of monitoring a patient receives—i.e., number and frequency of visits to the doctor and number and frequency of lab tests done for monitoring.

- Evaluate the supply of antiretrovirals
  1. Products available in the country.
  2. Cost of the products.
  3. Supply/distribution of the products.

Appendix A—Working and Review Group Members

2. Primary Prevention Technical Strategies

2.1 Voluntary Counseling and Testing

CDC Working Group Members:
Carl Campbell, IAB,DHAP/NCHSTP; Kelly Bussell, IAB,DHAP/NCHSTP; Carol Fridlund, PSRB/DHAP/NCHSTP; Edmund Gumisiriza, IAB/DHAP/NCHSTP; Michael Iatesta, PSRB/DHAP/NCHSTP; Kellie Lartique, TTSSB/DHAP/NCHSTP; Robin MacGowan, BIRB/DHAP/NCHSTP; Tom Painter, IAB/DHAP/NCHSTP; Kathleen Parker, IAB/DSTD/NCHSTP; Mark Rayfield, DASTLR/NCID; Deborah Rugg, BIRB/DHAP/NCHSTP.

Review Group Members:
Bernard Branson, CDC/PSRB/DHAP/NCHSTP; Beth Dillon, CDC/PSRB/DHAP/NCHSTP; Mary Kamb, CDC/PSRB/DHAP/NCHSTP; Claudes Kamenga, Family Health International; Elizabeth Marum, CDC/IAB/DHAP/NCHSTP; David Miller, UNAIDS; Tom Peterman, CDC/PSRB/DHAP/NCHSTP; Nathan Shaffer, CDC/IAB/DHAP/NCHSTP.

2.2 Preventing Mother-to-Child Transmission

CDC Working Group Members:
Nathan Shaffer, IAB/DHAP; Mary Glenn Fowler, EPI/DHAP; Jeanne Bertolli, EPI/DHAP; Eric Mouzin, IAB/UNICEF; Marc Bulterys, EPI/DHAP; Stefan Wiktor, IAB/ DHAP, Brian McCarthy, Reproductive Health/NCCDPHP

Review Group Members:
Eric Mercier, UNICEF; Catherine Wilfert, Elizabeth Glaser Pediatric AIDS Foundation; Art Ammann, Global Strategies for HIV Prevention; Claudes Kamenga, FHI; Tim Farley, RHP/WHO; Jean-Louis Lamboray, UNAIDS; Martha Rogers, DHAP/CDC

2.3 Blood Safety Strategy

CDC Working Group Members:
Eve Lackritz, NCHSTP/DHAP; Mary Chamberland, NCID/VR
Kenneth Clark, NCHSTP/DHAP; Sheila Mitchell, NCHSTP/OD

Review Group Members:
Jean Emmanuel, WHO, Chief, Blood Safety Unit; Brian McClelland, Director, Scottish National Blood Transfusion Service; Rick Davey, Medical Director, American Red Cross
Marcella Garcia, Acting Director, Blood Department, IFRC; Representative from European Union AIDS Task Force; Representative from International Fogarty Foundation/NHLBI; Representative from the International Red Cross; Richard Chatora, WHO/AFRO

2.4 STI Prevention and Care

CDC Working Group Members:
Caroline Ryan DSTDP/CDC, Kathy Parker DSTDP/CDC, George Schmid DSTDP/CDC

Review Group: Judy Wasserheit DSTDP/CDC, Bill Levine DSTDP/CDC, Gina Dallabetta IMPACT/FHI, Johannes Van Damme, HORIZONS/Population Council, Francis Ndowa, WHO Geneva

2.5 Youth Technical Strategy

Working Group Members:
Chad Martin, CDC/NCHSTP/DHAP; Lloyd Kolbe, CDC/NCCDPHP/DASH; Victor Barnes, NCHSTP/DHAP; Ken Rose, CDC/NCCDPHP/DASH; Janet St. Lawerence, CDC/NCHSTP, STD; Angel Rocca, CDC/NCCDPHP/OD; Linda Sussman, USAID

Review Group Members :
Jack Jones WHO/School Health – DASH; Barbara de Zalduondo, USAID; Sheila Mitchell, Contractor

2.6 Private-Public Partnerships

Strategy Cluster: Primary Prevention
Program Area: Private-Public Partnerships

Working Group Members:
Victor Barnes, CDC/NCHSTP/DHAP-IRS, Barbara Benson, CDC/NCHSTP/DHAP-IRS Renee Saunders, CDC/NCHSTP/DHAP-IRS

Advisory Group:
Ben Plumley, Glaxo-Welcome-Global Business Council, Paul DiDanato, Funders Concerned About AIDS-Business and Labor Responds to AIDS, Jacob Gayle, World Bank/UNAIDS/CDC-Global Business Council, Lynn Franzoi, Fox Entertainment Group-Business and Labor Responds to AIDS, Peter Petesch, Harrison and Ford- Business and Labor Responds to AIDS, Cindy Walters, Ford Motor Company, Subie Green, CDC Foundation

2.7 Behavior Change Communications

CDC Working Group Members:
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Review Group Members: Arvind Singhal, (Ohio University); Martin Fishbein, (Annenburg School of Communications, Philadelphia); Susan Newcomer (NICHD); James Carey (CDC/NCHSTP); Kim Miller (CDC/NCHSTP); Mike Greenwell (CDC/NCCDPHP); Dan Odallo (**UNAIDS**, Eastern and Southern Regional Office, RSA); Tony Johnston (**Population Communication Africa**, Nairobi); Greg Owino (**UNICEF**, Nairobi); Garth Japhet (**Soul City**,

RSA); Ruth Tshabalala (**WHO**/Lesotho); Elizabeth Huff (**WHO**/AFRO); Kevin O'Reilly (**WHO/Geneva);** Jane Harriet Namwebya (**AIC**, Uganda); David Losk, Wuleta Betemariam(**USAID**, Ethiopia); Dora Warren (**USAID**, New Delhi, India)

2.8 Surveillance Technical Strategy

CDC Working Group Members:
Timothy Dondero (IAB/DHAP), William Levine (DSTDP), Christopher Murrill (IAB/Dhap), Rebecca Martin (PSRB/DHAP), Bernard Branson (PSRB/DHAP), Mary Kamb (PSRB/DHAP), Thomas Hearn (PHPPO), Vu Minh Quan (PSRB/DHAP)

Review Group Members:
Aaron Zee (CDC, DSTDP), Nancy Binkin (CDC, DSTDP), Thomas Kenyon (CDC, BOTUSA), Sidibe Kassim (CDC, Projet RETRO-CI), Richard Steketee (CDC, DPD/NCID), Nancy Brener (CDC, NCCDPHP), Catherine McKinney (CDC, OAA), David Stanton (USAID), Bernhard Schwartlander (UNAIDS), Peter Ghys (UNAIDS), Stefano Lazzari (UNAIDS)

3. Capacity and Infrastructure Technical Strategies

3.1 Laboratory Technical Support Strategy

CDC Working Group Members:
Austin Demby, NCID/DASTLR (TB); Mark Rayfield, NCID/DASTLR (HIV); Richard Respess NCID/DASTLR/IAB (HIV)

CDC Review Group Members:
Joel Lewis, CDC/NCID/DASTLR (STI); Beverly Metchock, CDC/NCID/DASTLR (TB); Allan Pillay, CDC/NCID/DASTLR (STI); Bharat Parekh, CDC/NCID/DASTLR (HIV); Carol Fridlund, CDC/NCHSTP/DHAP (HIV), Carl Campbell CDC/NCHSTP/DHAP, John Ridderhof, CDC/PHPPO/DLS; Tom Hearn, CDC/PHPPO/DLS, Robert Martin, CDC/PHPPO/DLS; Tim Granade CDC/NCID/DASTLR (HIV). Brad Kay, WHO-AFRO;
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3.2 Information Systems Technical Strategy

CDC Working Group Members:
Kelly Bussell (International Activities Branch, DHAP-SE, NCHSTP), Calvin Johnson (Office of the Director, DHAP-SE, NCHSTP), Meade Morgan (Office of the Director, DHAP-SE, NCHSTP), Ray Ransom (Statistics and Data Management Branch, DSTDP, NCHSTP), Jaspal Sagoo (Prevention Information Office, OD, NCHSTP), Patrick Whitaker (Epidemiology Branch, DHAP-SE, NCHSTP).

Review Group Members: Tony Burton (WHO/Geneva), Brad Kay (WHO/AFRO), Kim Marsh (Surveillance Branch, DHAP-SE, NCHSTP), Mac Otten (WHO/AFRO)

3.3 Monitoring and Evaluation Technical Strategy

Working Group Members:
Deborah Rugg (CDC/BIRB/DHAP); John Novak (USAID); Ties Boerma (MEASURE Evaluation Project/USAID); Saha AmaraSingham (SYNERGY Project/USAID); Robin MacGowan (CDC/BIRB/DHAP); Meade Morgan (CDC/EPO/CDC); Janet Heitgerd (CDC/ATSDR); Jeanne Bertolli (CDC/EB/DHAP); Greet Peersman (CDC/BIRB/DHAP); Steve Banspach (CDC/NCCDPHP); Stu Berman (CDC/DSTD); Bobby Milstein (CDC/NCCDPHP)

Potential Review Group Members:
David Allen (CDC assignee South Africa); Bernhard Schwartlander (UNAIDS); George Tembo (UNAIDS Advisor, Zimbabwe); Peter Lamptey (FHI/IMPACT); Steve Mills, (FHI/IMPACT-Bangkok); Thomas Rehle (FHI/IMPACT); Lisanne Brown (Tulane); Jennifer Bryce (WHO); Thierry Mertens (WHO); Elisabeth Pisani (Narobi, Kenya); Willi McFarland (San Francisco Health Dept); Tom Coates (UC-SF ARI); Kathy Miner (Emory)

3.4 Training Strategy

CDC Working Group Members
Karen Wilkins; Mahomed Patel, EPO/DOIH; Sharon McDonnell, EPO/DOIH; Helen Perry, EPO/DOIH/MITCH; EPO/DOIH; Anne Rodman, EPO/DOIH; Ann Voigt, NCCDPHP/D/HERT; Lori de Ravello, NCCDPHP/R/HERT; Elizabeth Howze, NCCDPHP/D; Kellie Lartigue, NCHSTP, DHAP-IRS, TTSSB.

Review Group Members (provisional):
Donna Anderson, CDC/DSTDP; Mary Kay Larson, CDC/NCCDPHP/R/PIC; Wanda Walton, CDC/NCHSP/ Div of STD Prevention; Sue Dietz, CDC/NCHSTP; Dr. Wondi Alemu, WHO/AFRO; Richard Dicker, CDC/EPO/DT; Jeanette Stehr-Green, CDC/EPO/PHPPO; Chris Zahniser, CDC/EPO/DT; Michael Malison, CDC/PHPPO; Christopher S. Murrill, CDC/NCHSTP/IAB; Dora Warren, USAID New Dehli; Kevin DeCock, NCID/CDC; Alan Greenberg, CDC/NCHSTP; Dennis Coulson, Ethiopia SPH.

4. Care Support and Treatment Technical Strategies

4.1 TB Prevention and Care

Working Group Members:
Eugene McCray, NCHSTP/CDC; Thomas A. Kenyon, BOTUSA Project, NCHSTP/CDC; Elizabeth A. Talbot, EIS/NCHSTP/CDC; Mukadi Ya Diul, Family Health International

Review Group Members:
Kevin M. DeCock, NCID/CDC; Bess I. Miller, MD, NCHSTP/CDC; Mario C. Raviglione, WHO; Amy Bloom, CDC/USAID

4.2 Prevention and Treatment of Opportunistic Infections (non-TB)

Working Group Members :
Jon Kaplan, Stefan Wiktor, Eve Lackritz, Jonathan Mermin, DHAP, NCHSTP; Rene Ridzon, DTBE, NCHSTP; Madeleine Sassan-Morokro, Project RETRO-CI; Alison Grant, London School of Tropical Medicine and Hygiene; Rick Marlink, Harvard School of Public Health.

Review Group Members :
Badara Samb, Jos Perriens, UNAIDS; Kevin DeCock, DPD, NCID.

4.3 Palliative Care Technical Strategy

Working Group Members:
Michael C. Johnson, HRSA; Rueben Granich, EPO, CDC (CA); Claude Kamenga, FHI
Linda Sussman, USAID

Advisory Group Members:
Jos Perriens, UNAIDS; Elizabeth Marum, Malawi; Jonathan Mermin, CDC, Uganda;
Stephan Witkor, CDC

4.4 Innovative Use of Antiretrovirals

Working Group Members:
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Review Group Members:
Mukadi Ya Diul, Family Health International; Diane Dickinson, Private physician in Botswana; Gaston Djomand, Projet Retro-C, Abidjan, Côte d'Ivoire; David Stanton, USAID

Appendix B—Suggested Reading

2. Primary Prevention Technical Strategies

2.1 Voluntary Counseling and Testing

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3. Blood Safety and AIDS. UNAIDS Points of View. October 1997.
4. Global Blood Safety Initiative Guidelines. WHO series.
5. Prevention of HIV transmission by blood transfusion in the developing world: achievements and continuing challenges. Lackritz E. AIDS 1998; 12 (suppl A): S81-S86.
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   Safe Blood and Blood Products
   Guidelines and Principles for Safe Blood Transfusion Practices
   Safe Blood donation
   Screening for HIV and Other Infectious Agents
   Blood Group Serology

2.4 STI Prevention and Care

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2.5 Youth Technical Strategy

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2. Advocates for Youth "Serving the Future and Update on Adolescent Reproductive and Sexual Health Programs in Developing Countries" 1999.
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5. UNAIDS Best Practice Collection "Sex and Youth: Contextual Factors affecting risks for HIV/AIDS" May 1999.
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7. US Centers for Disease Control and Prevention "Youth Involvement" 1997.
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9. US Centers for Disease Control and Prevention " Compendium of Effective Behavioral Interventions" 1999.
10. US Centers for Disease Control and Prevention "Project AIM and Parent Child Communication Instruments" 1999.
11. US Centers for Disease Control and Prevention "Youth Risk Behavior Survey" 1999.
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14. WHO, UNICEF, UNFPA "Programming for Adolescent Health and Development #886" Geneva 1999.
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2.6 Private-Public Partnerships

1. AIDS is Your Business: A Guide to Corporate HIV/AIDS Grant Making: Funders Concerned About AIDS. (3rd edition 1998).
2. Best Practices: Company Actions on HIV/AIDS in Southern Africa: Organization of African Trade Union Unity.
3. Business Response to HIV/AIDS: Innovation and Partnership: UNAIDS and The Prince of Wales Business Leaders Forum.
4. CDC: Business Responds to AIDS Manager Kit. (Updated 1998).
5. CDC: Labor Responds to AIDS Labor Leaders' Kit. (Updated 1998).
6. Developing a Global Business Response to HIV/AIDS, Strategies for U.S.-Based Multinational Corporations: Levi Strauss Foundation
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